ARCHITECTURAL RECORD

HOUSES

MAY 1948

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Pride comes with the spic and span appearance this modern siding material gives a home. Satisfaction . . . with the modest price, the durability, the fire safety that come with it.

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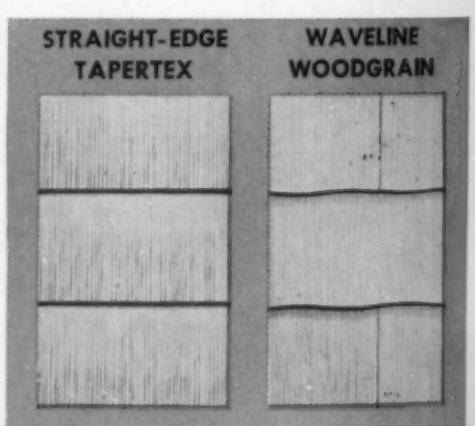

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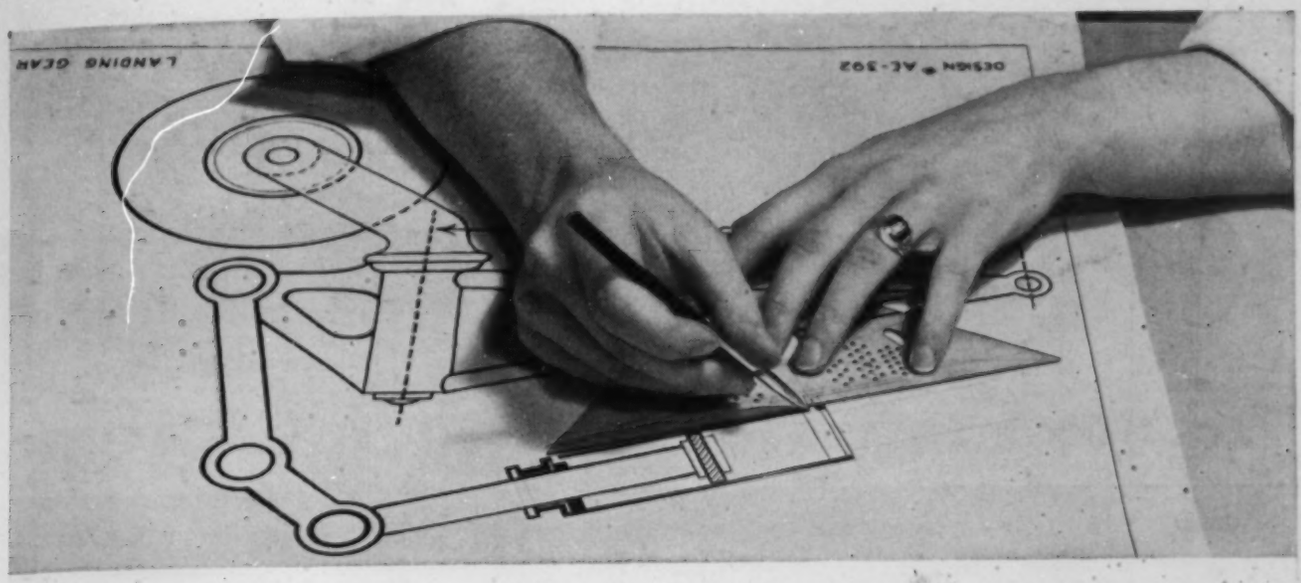

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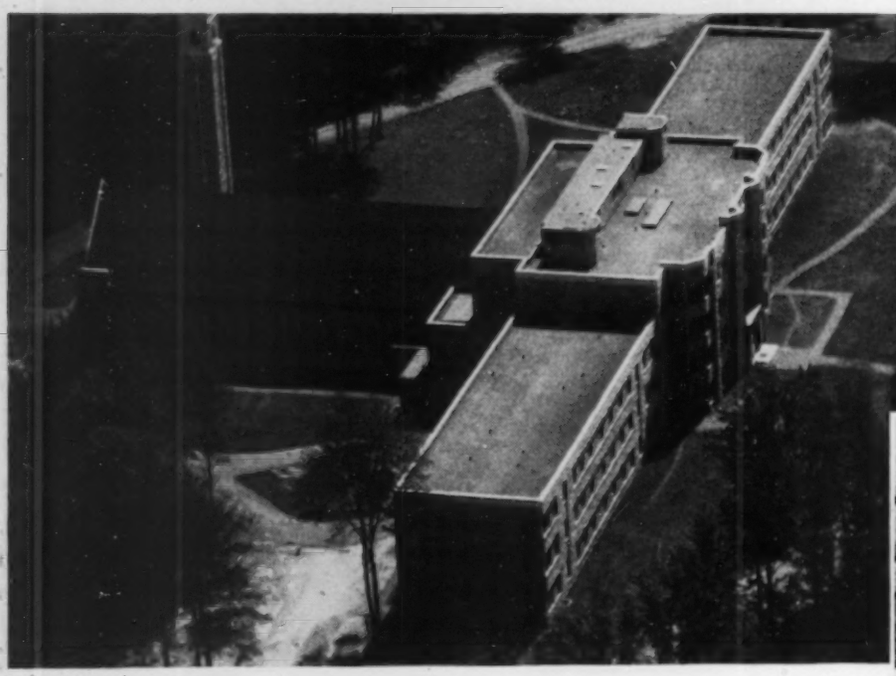

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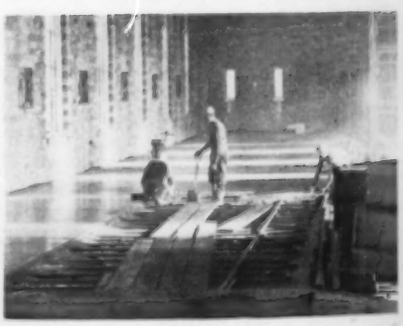

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RECORD

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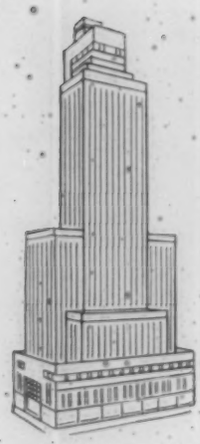

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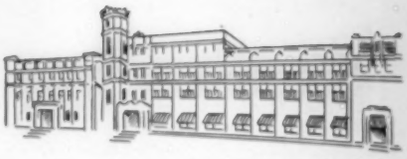

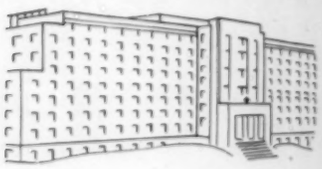

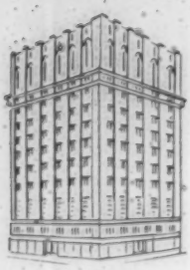

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THE RECORD REPORTS

Extend Title VI to 1949, Improve FHA Aid to Home Ownership, Urges Joint Housing Committee; Census Bureau Predicts Trend toward Apartments

Of top Congressional importance to construction, now that the European Recovery Program has cleared the legislative chambers, are the recommendations of the House and Senate's Joint Committee on Housing, whose tenure ends May 15.

Generally, the Committee suggests prompt enactment of comprehensive housing legislation with emphasis on expanding housing services of private enterprise.

For short-term needs, it goes along on extension to April, 1949, of Title VI mortgage insurance provisions of the National Housing Act but with revision of the "necessary current cost" formula and with stress on rental housing. (Temporary extension of this title was approved by Congress late in March pending the Senate's consideration in April of longer-term continuance.)

The Committee also proposes extension of loan insurance for prefabrication of houses and broadening the terms to cover financing from the time a house is completed in the factory until it is erected on the site.

Long-Term Program Urged

From the long-term standpoint, the Committee advises improved FHA aid to home ownership, particularly for families of modest income. The program, it says, should include 95 per cent loans, 30 year maturity, 4 per cent interest, and mortgages not to exceed $6000.

It proposes similar moves on rental housing — 90 per cent loan, 40 year maturity, 4 per cent interest, and, on veterans' cooperatives, insurance for 95 per cent loans.

Federal aid to local communities is suggested to help them clear their slums and blighted areas and make redevelopment possible. A five-year program under HHFA should provide $1 billion in loans and $500 million in subsidy commitments. This, be it noted, should be "wholly distinct and separate from the low-rent public-housing program." Aid should be by capital grant on a two-to-one matching basis.

Other Proposals Made

Low-rent public housing also is proposed — 500,000 units over the next five years with increased local responsibility and assurance that tenancy is held to low-income families.

Other points made by the Joint Committee on Housing include: (1) letting RFC finance acquisition of plants, machinery and equipment to be used in connection with production for large-scale housing projects; (2) transfer from RFC to HHFA of the secondary home mortgage market; (3) joint Commerce Department and HHFA studies of housing materials requirements and present production capacity; (4) vigorous prosecution by Justice Department and FTC of trade restraints in the production and distribution of building materials; (5) authority for the Secretary of Agriculture to make loans and grants in connection with rural housing aid; (6) authority for technical housing research within HHFA.

Inflation Talk Rises

While Congress was considering European recovery legislation, President Truman asked for temporary military draft and universal military training. This, along with other factors, brought renewed inflation talk among government economists. Cited were: (1) increased military expenditures; (2) tax reduction; (3) the fact that through ERP the surplus of exports over imports would mount; (4) the steel price rise; and (5) union demands for higher wages, which would increase both costs and consumer demand.

All this was bound to affect housing, the experts agreed, though they said different things about just how. High military expenditures over the long term, it appeared, might entail some government construction. Officials thought that it would, although no construction programs were reported in process. Even in the absence of direct government construction, additions to the military budget could require some industrial construction.

On the remaining inflation points, officialdom divided into the usual schools. Some continued to expect a collapse of the building boom, using the arguments of a year ago which proved false then but might be confirmed now. Others, on the contrary, expect more inflation to shift the demand for housing without greatly affecting volume. Countless studies show that inflation enriches some, impoverishes others, which would suggest houses at fancy prices.

ERP by itself is not expected to do much to the industry directly. Building materials are not being sent in volume.

Rent Control Boards Added

In its extension of rent control, Congress put authority in the hands of local advisory boards but in such a way that rescreening of membership by the Housing Expediter became necessary to make sure that specifications under the new Act were met. If recommendations of the local boards are not approved by the Expediter within a specified time, the

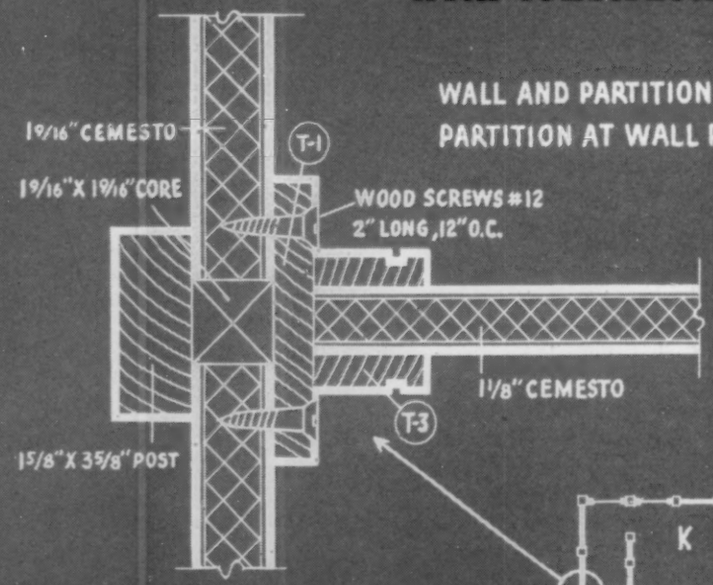
(*Continued on page 10*)

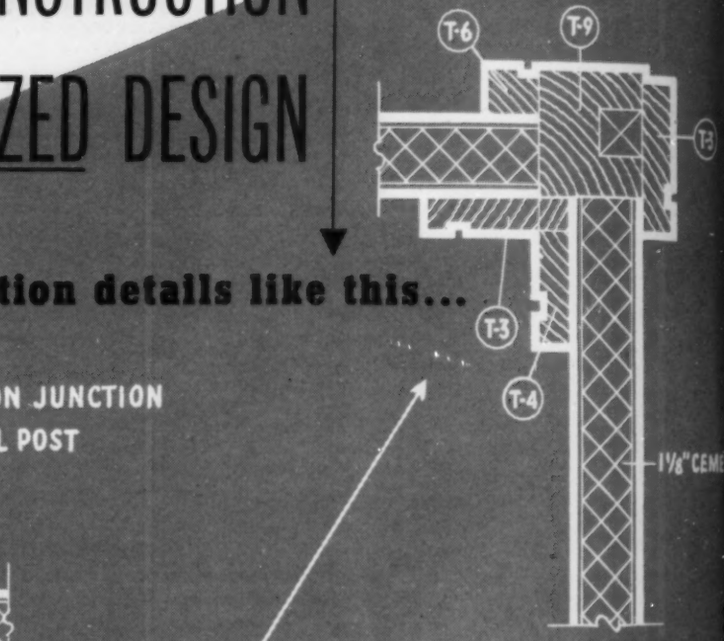
—Drawn for the RECORD by Alan Dunn

a major advance

CELOTEX INTRODUCES A COMPLETE SYSTEM OF CONSTRUCTION FOR PANELIZED DESIGN

with construction details like this...





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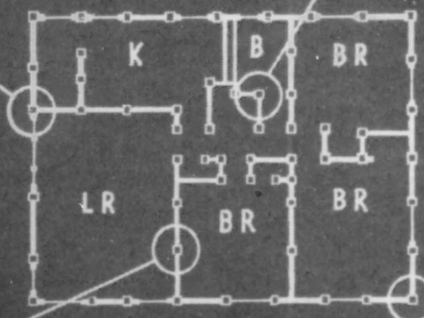
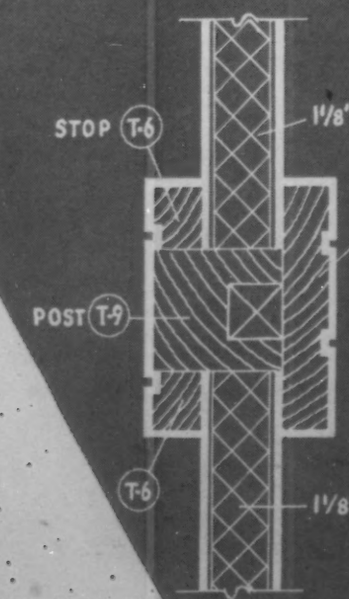
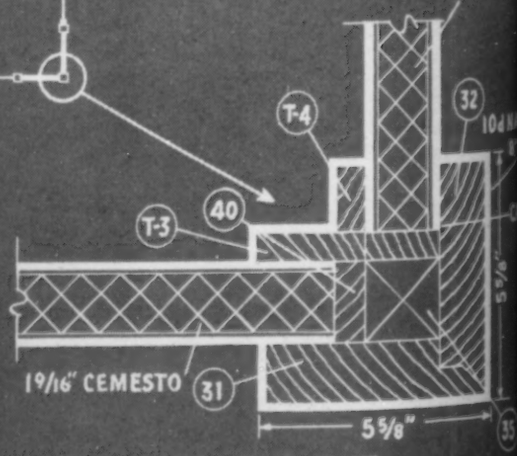




TYPICAL PARTITION
POST SECTION



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FOR WALLS...ROOF DECKS...PARTITIONS

THE RECORD REPORTS

(*Continued from page 7*)

cases go before an Emergency Court of Appeals for review. President Truman accepted the legislation with the comment that it was not strong enough to afford sufficient protection but was better than no control at all.

Housing Census Cleared

Senator Taft is sponsor of the bill, which got a Senate OK before it went to the House late in March, to provide for a housing census in connection with the general population count each 10 years. The first check would come in 1950, would include the number of dwelling *units* as well as of dwelling structures, and would show the geographical distribution. Under the terms of the bill, data would be gathered on characteristics of the housing, including utilities and equipment.

Need for the tabulation now is stressed because of the tremendous geographical shifting of population since 1940 and because of the current heavy need of housing.

(*Continued on page 16*)

Gigantic display of uses of aluminum in industrial field. Alcoa's new Davenport mill

BUILDING NOTES

Aluminum Rolling Mill

More than six and a quarter million pounds of aluminum are being used in the construction of the new Davenport (Iowa) sheet and plate rolling mill of the Aluminum Company of America.

The giant plant, extending for nearly a mile along the banks of the Mississippi River, is basically an all-aluminum project, with the exception of 25,000 tons of structural steel framework which is painted with aluminum paint. More than three miles of aluminum insulated wall panels, weighing over a million pounds, compose the bulk of the exterior surface of the project. The remainder consists of nearly 500,000 sq. ft. of aluminum window sash, and part of the plant's 400-odd aluminum doors. The aluminum roof, sprawling over 47 acres, contains nearly three million pounds of the metal.

The spectacular display of the use of aluminum in the industrial field also includes 227 all-aluminum ventilators dotting the roof, and a four-mile-long aluminum chain-link fence surrounding

(*Continued on page 12*)

NEWS FROM CANADA

By John Caulfield Smith

First building of its type financed under Canada's National Housing Act offers two rooms for $16 a month or three for $21, is fireproof, of hollow wall construction

Low Rentals Made Possible

Two-room suites that rent for $16 a month? Three-room suites that rent for $21 a month? In a brand new, fireproof apartment building? Impossible! But it's true — at least in the town of Burlington, near Hamilton, Ontario.

Like many other communities, Burlington had its ingenuity taxed to provide shelter for low income families. It took a decidedly original approach in solving the problem. Inspired by Mr. Hughes Cleaver, local member of Parliament, the town council, leading citizens, service clubs and veterans' organization joined hands to form the Burlington Housing Corporation. A limited dividend company, it utilized the provisions of Canada's National Housing Act to erect the Brant Court Apartments.

When the plans for the building were prepared in 1946 the cost was estimated at $32,000. Though construction took over a year and a half, and during that time material prices and labor rates skyrocketed, the estimate was exceeded by only $1500. The Burlington Housing Corporation raised 10 per cent of the capital required, and borrowed the remaining 90 per cent from the Dominion Government at 3 per cent interest.

To keep rentals at the lowest possible level, directors of the Corporation serve without remuneration. No return of the Corporation's equity principal is contemplated, and earnings on its investment are foregone. (The NHA permits limited dividend housing companies maximum earnings of 5 per cent per annum). Construction was carried out by sub-contract, and many contractors took little or no profit. Operations were supervised by a retired business man with construction experience, and the town council cooperated by fixing the annual property taxes at a low $100.

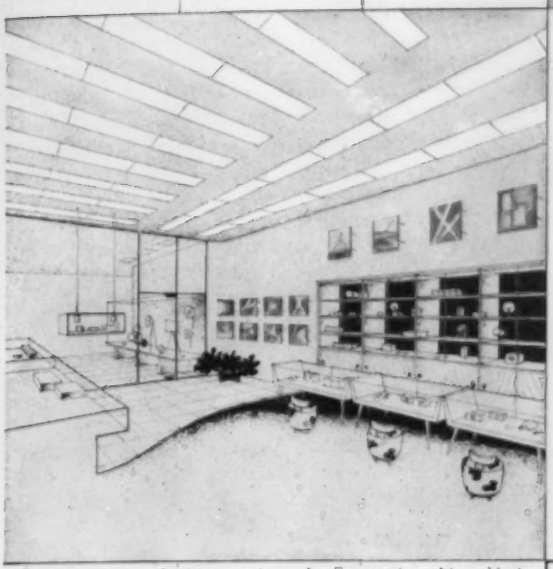
While these contributions from public and private sources helped achieve rock bottom rentals, an even more important factor was the length of amortization period allowed. In the case of the Brant Court Apartments it is 47 years. At the end of this time, ownership of the project will be turned over to the town of Burlington and rentals can be further reduced.

The two-room, $16 a month suites consist of a good-sized combination living-bedroom, kitchen and bathroom. The three-room, $21 a month suites consist of a living room, bedroom, kitchen and bathroom. Dining space is provided in each living room, and kitchens also serve as laundries. Only old age pensioners, widows receiving a mother's allowance, and veterans on partial pension qualify as tenants.

Architecturally speaking, the Brant Court Apartments are modern Georgian. The plan ensures maximum privacy for each suite without wasting a square inch of area. There are three suites on the first and second floors, and two suites and a boiler room in the basement. Exterior walls are hollow in construction, consisting of 4-in. brick, 2-in. air space, and 8-in. cinder block plastered on the inside. Floors are reinforced concrete slabs finished in mastic tile.

(*Continued on page 174*)

miller troffer lighting can be installed to form CEILINGS UNLIMITED*



Camera store — Architect: Jose A. Fernandez, New York

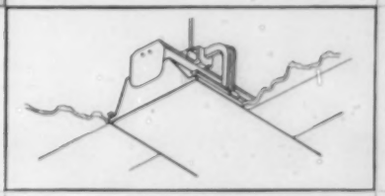
Application of Miller Fluorescent Troffer Lighting Systems is boundless, giving stores, schools, offices, factories good light as an integral part of the architecture, plus this added benefit — ceiling patterns as desired . . . CEILINGS UNLIMITED.

Miller Lighting Service is all-inclusive. It covers the needs of Planned Commercial and Industrial Lighting.

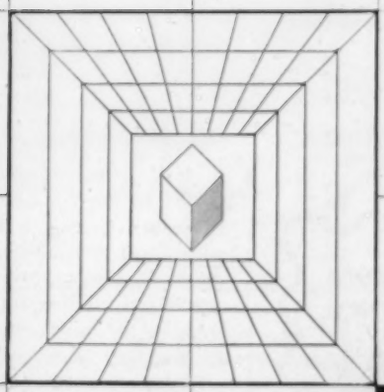
Miller 50 and 100 Foot Candlers (Continuous Wireway Fluorescent Lighting Systems) have been established as standard for general factory lighting. And Miller incandescent and mercury vapor reflector equipment has broad factory and commercial application.

Miller field engineers and distributors, conveniently located, are at your call.

*Trade Mark



Miller Furring Hanger (patented) simplifies installation. Miller continuous wireway cuts wiring and fitting costs. All units are Bonderized for corrosion resistance.



THE miller COMPANY
SINCE 1844
ILLUMINATING DIVISION, MERIDEN, CONNECTICUT

ILLUMINATING DIVISION: Fluorescent, Incandescent, Mercury Lighting Equipment. HEATING PRODUCTS DIVISION: Domestic Oil Burners and Liquid Fuel Devices. ROLLING MILL DIVISION: Phosphor Bronze and Brass in Sheets, Strips and Rolls

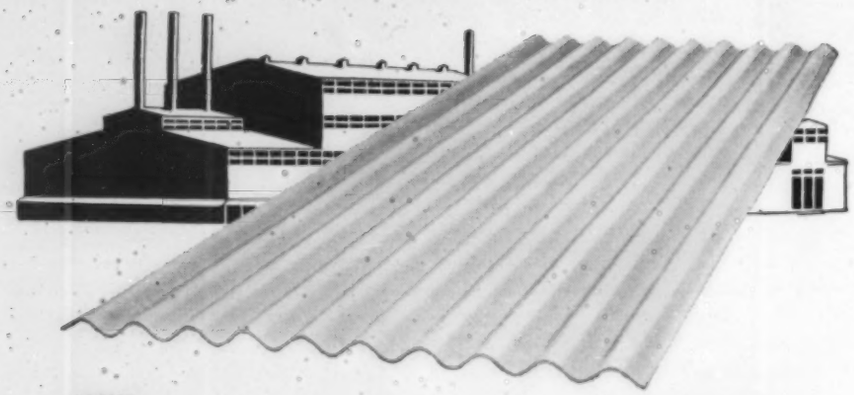
Chermayeff.

3

Planning a

Chemical Plant Oil Refinery Paper Mill?

...or an addition?



You can now get ASBESTONE

Asbestos-Cement Corrugated Roofing & Siding

—the lifetime roofing and siding that's fireproof and corrosion-proof. Asbestone can't be damaged by weather, rats, or termites. No painting. No upkeep.

Here are a few of the many prominent users:

LONE STAR CEMENT CORP.
CALIFORNIA OIL CO.
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CROSBY CHEMICALS, INC.
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Why we can assure you early delivery

We are concentrating on production of this single industrial product. Stocks are now ample to make some immediate shipments. Free Engineering Service, available on request, shows how Asbestone can be adapted to your needs.

ASBESTONE CORPORATION

5300 TCHOUPITOULAS STREET NEW ORLEANS 15, LA.

Specialists in Asbestos-Cement Building Products for over 25 Years

THE RECORD REPORTS

(*Continued from page 10*)

the grounds and buildings. Aluminum has been used, however, only where it possesses "definite advantages over other materials in weight, cost, physical properties, ease of erection, maintenance, or one of several other factors," according to Thomas D. Jolly, Alcoa's vice president in charge of engineering and purchases. "As an example, a five-man crew can lay the prefabricated aluminum roof at a rate of 5000 sq. ft. per day, and eight men can erect a bay of aluminum exterior wall surface 20 ft. long by 12 ft. high in two hours."

Also included in the Davenport project are 112 aluminum precision-built homes being erected near the plant for sale to employees. The 3-bedroom houses utilize load-carrying insulated aluminum panels, aluminum windows, screens, partitions, thresholds and interior trim.

Doctors' office building in Hartford has own laboratory, direct access to hospital

Medical Building

Now being erected in Hartford, Conn., by the Connecticut Mutual Life Insurance Co., is a Medical Building which will contain suites of offices for about 90 doctors. Situated north of the new Hartford Hospital building, it will connect directly with the hospital on its first four floors.

The main part of the building will have eight floors, the first devoted to commercial use — a prescription druggist, florist shop, barber shop, etc.

The building will contain a laboratory, managed as a private enterprise but closely affiliated with the hospital pathological department. Architects are Moore & Salsbury.

Trade Mart Nears Completion

Scheduled for opening on July 1 is the $1.5 million International Trade Mart in New Orleans, converted from a 50-

(*Continued on page 14*)

Why be a weightlifter?

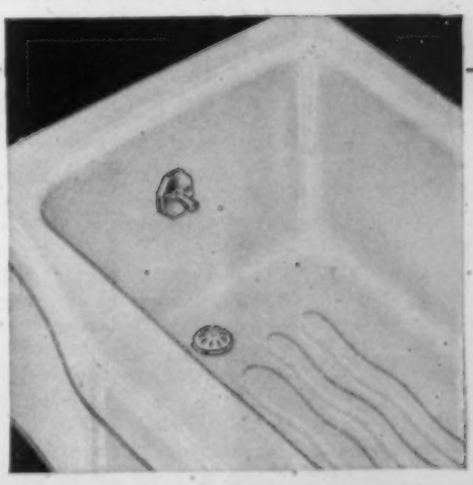
Briggs bathtubs

are only

⅓ as heavy!

Briggs takes the grunts and groans, the heaves and ho's out of bathtub installations—with the easiest-to-handle tub you've ever lifted. And that's just the beginning. Add the tub's Safety-Bottom . . . leakproof edges, tub to wall . . . wide rim seat. Add its stainproof (acid-resistant) porcelain enamel at *no* extra cost. Gives you an idea of why these die-formed *steel* fixtures are breaking all records . . . why Briggs Beautyware is the biggest news in plumbing today! Write *now* for new catalog featuring Briggs plumbing fixtures and Briggs brass. Briggs Manufacturing Company, 3031E Miller Avenue, Detroit 11, Michigan.

BRIGGS *Beautyware*



Briggs tubs eliminate all unnecessary weight: tip scales at only 110 lbs. Why should any tub weigh more? Another big feature: Briggs' patented *Safety-Bottom.*

The PREFERRED Home Floor *is* Wright Rubber Tile

Color Goes Clear Through

New Walking Comfort

Easiest to Clean

LIFETIME SMARTNESS—the keynote of Wright Rubber Tile advertising in leading magazines to home owners—expresses the fast mounting trend in home floors, and explains the increasing preference for Wright Rubber Tile in the home, among architects and builders.

WRIGHTEX is the recommended Wright Rubber Tile for home floors. Its complete adaptability to present day trends and home-floor requirements is notable. Its wide choice of rich, enduring colors and sizes assures the much-wanted variety of individual designs, that fit your decorative plans.

From the practical side—the resilient texture of WRIGHTEX cushions every step . . . an important addition to kitchen floors especially. It is noiseless. Furthermore, it is the easiest of all floors to keep clean, glowing and lustrous.

Where radiant heat is planned — WRIGHTEX is the outstanding preference. Exhaustive tests demonstrate that it is not affected by high temperatures . . . reduces heat loss to a minimum . . . odorless.

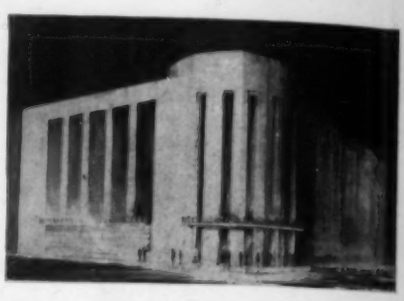
In the home market, as well as for churches and hospitals, WRIGHTEX sets the top-quality pace, as does WRIGHTFLOR for commercial and business installations exposed to heavy traffic. For complete information on Wright Rubber Tile, write—Taylor Manufacturing Company, 3074 W. Meinecke Ave., Milwaukee 10, Wis.—America's oldest maker of rubber floor tile.

WRIGHT RUBBER TILE

Floors of Distinction

THE RECORD REPORTS

(*Continued from page 12*)



International Trade Mart, New Orleans, is nearing completion for July 1st opening

year-old mill-type building into a streamlined market place for the interchange of goods between the Mississippi Valley, Latin America and the world. Architect for the project is Rathbone DeBuys; Godat and Heft are consulting engineers.

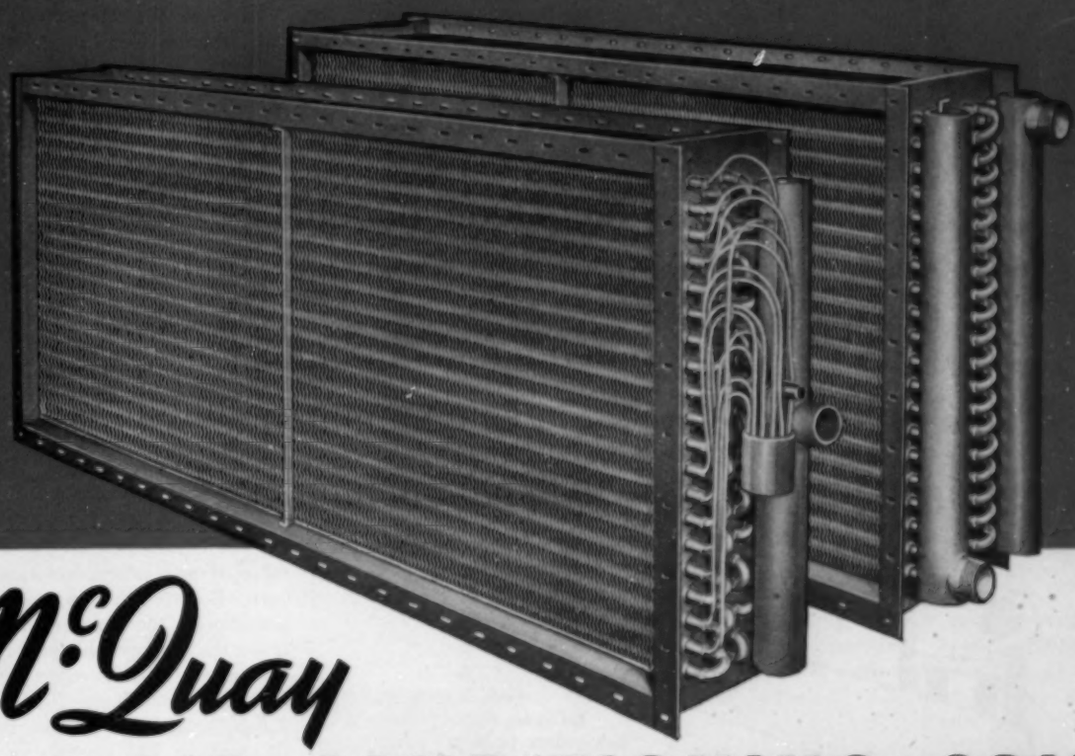
The building stands virtually on stilts, three rows of square sawmill piles sunk 6 ft. below street level, filled in with brick bat and topped with heavy plank and masonry step-footing, forming the foundation. Under the entire ground floor columns not more than 15 ft. apart are driven 7 ft. below street level.

On the outside, above the foundation, are cast iron columns shaped like horseshoes around heavy timber topped by girders, with the actual brick construction beginning 20 ft. above street level. Surrounding the cast iron columns are brick pilasters, covered with cast stone, with glass block on the outside of the brick wall between the pilasters. The corner of the building has been rounded with a steel grillage to permit curved tile construction.

CATHOLIC BUILDING CONVENTION, EXPOSITION

The first National Catholic Building Convention and Exposition will be held at the Stevens Hotel, Chicago, June 30 through July 3. Sponsored by the Business and Industry Foundation of the college of St. Joseph's of Indiana, the meeting is expected to draw about 5000 pastors, religious superiors and college officials from all parts of the country. The program will present outstanding authorities from the fields of architecture and engineering, construction and remodeling, equipment, furnishing and decorating, in a series of general and panel sessions. All types of Catholic structures will be discussed: churches, schools, convents, rectories, recreation centers, college buildings, hospitals, orphanages, homes for the aged or infirm, and cemetery structures.

HYDRAULIC EXPANSION means better contact!

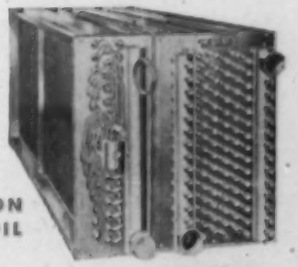


McQuay AIR CONDITIONING COILS

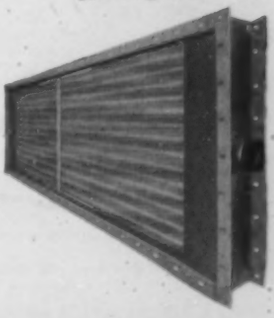
Superior contact fin to tube—assured turbulence of the heating or cooling medium—two reasons for top performance in McQuay air conditioning coils. Exclusive Ripple-Fin coils are formed by a process in which copper tubes are hydraulically expanded into plate type aluminum fins under pressures up to 4500 PSI, assuring maximum heat transfer between primary and secondary surfaces. Rippled inside tube surfaces, created in the expansion process, add necessary turbulence to the liquid or gas medium for greater heat transfer.

Practically limitless in range of sizes and capacities, McQuay coils for water, steam, direct expansion or combination uses are engineered to meet your requirements. See your McQuay representative or write McQuay, Inc.

Representatives in Principal Cities.



COMBINATION COIL



STEAM BLAST COIL

MAKE THE SEASONS COME TO YOU

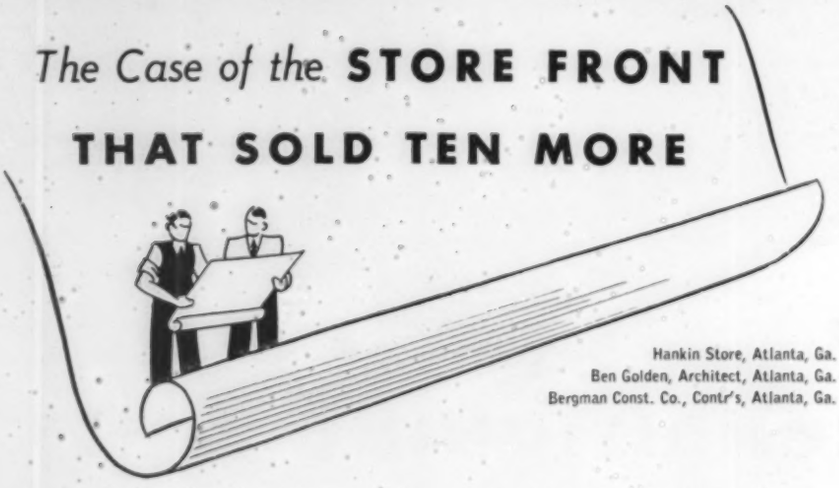
McQuay Inc.

1605 Broadway Street N. E.
Minneapolis 13, Minnesota

HEATING • AIR CONDITIONING • REFRIGERATION

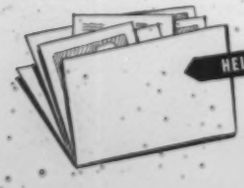
GEORGIA MARBLE—THE MODERN BUILDING MATERIAL

The Case of the **STORE FRONT THAT SOLD TEN MORE**



Hankin Store, Atlanta, Ga.
Ben Golden, Architect, Atlanta, Ga.
Bergman Const. Co., Contr's, Atlanta, Ga.

That marble can be modern was admirably demonstrated by its use on the front of this store and office building. The effect obtained by the veneer of bush hammered Georgia Marble was so attractive that it suggested similar use to other builders and sold ten more projects for architects all over the country.



Extensive data on "*The Marble with the Sparkling Crystal*" is available to you. Just write our nearest sales and service office giving the type of building under consideration. You will receive a specially prepared file of detail sheets and other information of interest and value.

GEORGIA MARBLE

The Marble with the Sparkling Crystal

Produced by THE GEORGIA MARBLE COMPANY *of Tate, Georgia*

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THE RECORD REPORTS

(*Continued from page 10*)

Trend to Apartments Noted

A Census Bureau forecast of population changes through 1947 points to a gradual but definite trend to apartment houses. The average size of families over the long pull tends downward. This in itself makes the full-size, single-story houses less interesting and more troublesome. Assumption that the average age of the population will go up means a smaller proportion of families that must have backyard play space for children, that must have indoor play space, that must have separate bedrooms for growing offspring of opposite sex. The older people need no backyards, no rooms dedicated to noisy destruction with toy tool chests, painting sets, etc.

"The expected changes in the number of persons joining the labor force and in the number of marriages will have an impact," says the report, "on the demand for housing, for it is at the time of these events in particular that the younger generation leaves the parental roof and establishes families in its turn. Because buildings are relatively permanent, the number of new families is not the demographic factor of primary importance in the housing situation, but rather the net change in the number of families (the new families minus those disbanded). The number of persons of the age to form new families in a given year depends primarily on the annual number of births 18 to 25 years earlier, but the number of persons of the age at which established families come to an end depends primarily on the number of births many years earlier."

Nor does the change in the composition of the population affect only housing construction. Cities grow more slowly. Demand for new water, sewer, school facilities and utilities goes upward at a slower pace. Communities can't go into debt to create new utilities with the old assurance that a rising population will spread the cost through the years.

Housing Needs Estimated

The Congressional Joint Committee adds its conclusions to previous ones on housing volume needed in the years just ahead. Census Bureau figures indicate that at least 15,500,000 non-farm units will be needed between now and the end of 1960. This would call for an annual average of not less than 1,285,000, says the Committee, but with farm housing added it is clear that for many years 1,500,000 houses should be built annually in the United States.

Commenting more specifically on

(*Continued on page 18*)

where hotels use *Non-Slip Floors* ...for safety's sake!

Firm-footing is important in many parts of hotels.

Whether behind-the scenes, or out-front, the hazard of slipping is a constant danger to both guests and personnel. Accidents due to slips and falls account for one-fifth of all claims for compensation.

Non-Slip floors are the proved answer.

ELEVATOR SILLS: Feralun* is universally specified by architects for elevator sills to prevent costly accidents.

KITCHEN: Use Amcolun, for safety's sake, in the kitchen where oily or wet conditions frequently occur. Protect your personnel.

SIDE ENTRANCE: We recommend Amcolun—the non-slip abrasive tile—wherever floors present a slippery condition due to "tracking-in."

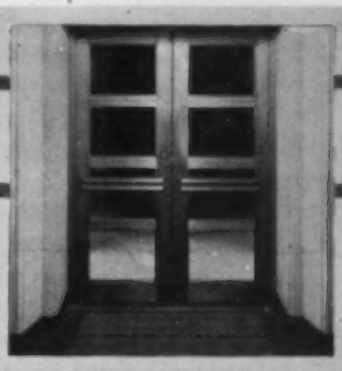
MAIN ENTRANCE: . . . and for exterior steps, we suggest Bronzalun* thresholds and treads.

Our Advisory Engineering Service extends to all key cities, offering you a convenient, authoritative source for non-slip flooring information. Meantime, check our non-slip products in Sweet's File, 13a-8.

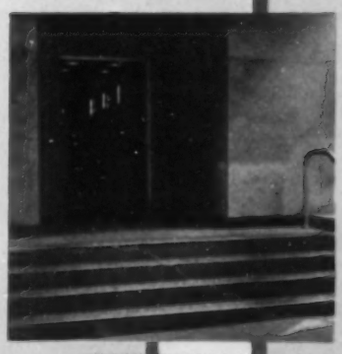
The American Abrasive Metals Company
IRVINGTON • NEW JERSEY
*Reg. U. S. Pat. Off.

KITCHEN

ELEVATOR SILLS



SIDE ENTRANCE



MAIN ENTRANCE

American Abrasive Metals Co. (AR 5-48)
460 Colt Street, Irvington, New Jersey

☐ For safety's sake, send me your technical data catalog on all your non-slip products.

☐ Please send me the name of your advisory engineer located nearest to me.

My Name ..... Title .....

Company .....

Address .....

City ..... State .....

YOU FACE NO *Style* OBSTACLES WITH BASIC OAK FLOORING

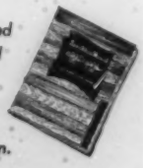
The natural beauty of oak flooring welcomes any styles or colors in home furnishings. It is especially budget-wise for those new-home builders who plan to use their present furniture at first, adding new pieces from time to time as circumstances permit.

This same adaptability permits changing of wallpaper, paint, and rugs without restraint, because the warmth and charm of oak accept new colors harmoniously. Thus wide latitude is given to fashion-leaders who wish to adopt the styles of the year or the season.

Oak is the sensible base, too, for wall-to-wall carpets. It is smooth and firm, yet resilient, giving carpets longer life, making them easier to clean. When they wear out, wholly or in spots, a quick, inexpensive return can be made to lasting oak floors.

We suggest that for complete flexibility in decor, new homes start with beautiful, durable, adaptable oak floors.

ASK FOR ARCHITECTS' DATA BOOK—*which gives quick and usable information for specifying, laying, finishing and maintaining oak floors. Available from your local oak flooring dealers or from the National Oak Flooring Manufacturers' Association, 814 Stezick Building, Memphis, Tenn.*



OAK FLOORS

BEAUTY • DURABILITY

ADAPTABILITY • ECONOMY

THE RECORD REPORTS

(*Continued from page 16*)

farm housing, the joint group states that "some of the nation's worst housing is to be found in rural areas." Census reports show about twice as much farm housing as non-farm housing needs repairs. Overcrowding is also more marked, the Committee points out, in farm housing areas than in non-farm housing and the proportion is about double that of non-farm housing. Estimates of the magnitude of the housing job to be done in this field range between 200,000 and 300,000 units a year for at least a decade.

War Housing Removal Slowed

HHFA Administrator Raymond M. Foley tells of investigating the extent of occupancy of war housing to learn whether removal could be speeded up. In view of the high occupancy rate he advises Congress to retain removal provisions as flexible as those now effective. If certain types of temporary housing are acceptable in the local community and should be used to fulfill an extended need, it would be desirable, he says, to free that housing from the necessity of annual federal surveys. He supports legislation to allow continued use for certain needs if the local community requests.

Loan Rule Changed

FHA has made a change in regulations on property improvement loans which requires a cash down payment of 10 per cent of the proposed improvement. This became effective April 20. In estimating the "cost," trade-in allowances are not deductible; the value of work or materials provided by the borrower himself are not to be included.

This type of loan has been widely used, FHA reports. More than 7½ million have been made during the dozen or more years of its operation. Improvements under the program have reached more than $2¾ billion.

❖ ❖ ❖

ON THE CALENDAR

Through May: Exhibition, "Furniture of Today," Rhode Island School of Design Museum, Providence, R. I. (See page 166.)

May 2–15: Combined Arts Festival, featuring the Gimbel Pennsylvania Art Collection and an exhibition of about 50 drawings by George Biddle, Pennsylvania State College, State College, Pa.

May 20–21: Annual Spring Meeting of The Society of the Plastics Industry, featuring merchandising, technical and business sessions, Atlantic City, N. J.

May 21–June 12: Exhibition of about

(*Continued on page 20*)

THIS CATALOG DESCRIBING IN DETAIL THE Salter *Feather-Touch* LINE IS YOURS FOR THE ASKING

So that you may know all the features of this revolutionary Prestige Feather-Touch Line and the variety of available patterns, send for this catalog today or ask for a copy at your plumbing wholesaler.

371—Feather-Touch center set lavatory fixture on 4" centers complete with Salter snap-lock pop-up waste.

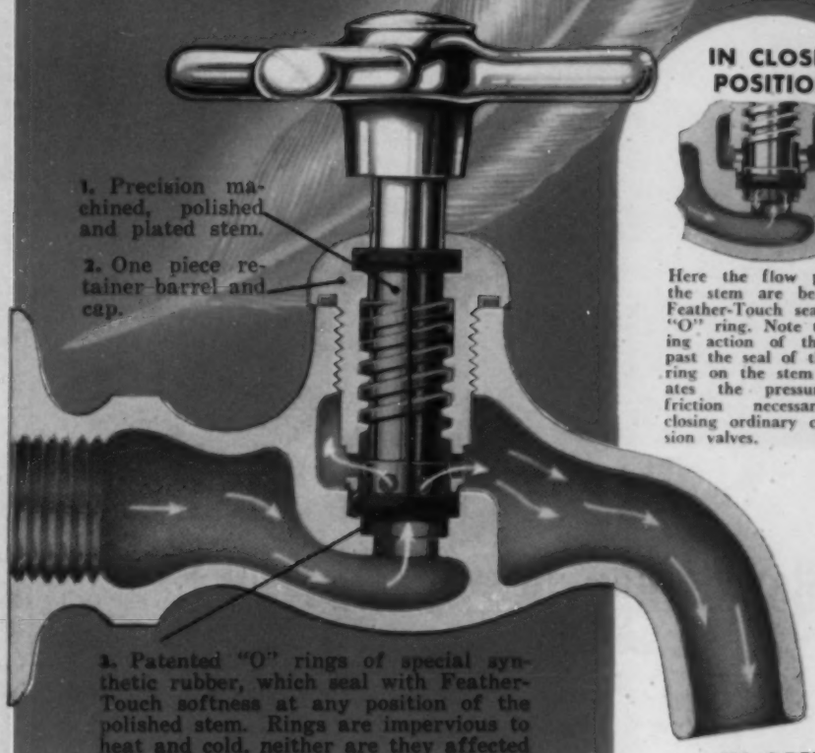
601—Feather-Touch sink fixture for installation on metal or wood ledge sinks with 6" center openings. Complete with Salter flow control unit.

306—Feather-Touch combination swing spout sink fixture on 8" centers with patented Hydro-Lock spout—its guaranteed for 5 years.

260—Feather-Touch Lavatory sink faucet with new finger-tip circular handle.

138D—Feather-Touch adjustable flange bibb with four arm metal handle.

LOOK INSIDE And SEE HOW Salter Feather-Touch VALVE CONSTRUCTION ACHIEVES FEATHER SOFT CLOSING



1. Precision machined, polished and plated stem.

2. One piece retainer barrel and cap.

3. Patented "O" rings of special synthetic rubber, which seal with Feather-Touch softness at any position of the polished stem. Rings are impervious to heat and cold, neither are they affected by the chemical action of any liquid, thus they will last for years.

IN CLOSED POSITION

Here the flow ports in the stem are below the Feather-Touch seal of the "O" ring. Note the sliding action of the ports past the seal of the "O" ring on the stem eliminates the pressure and friction necessary for closing ordinary compression valves.

IN OPEN POSITION

Flow ports have now moved above the "O" ring to permit a full flow of water thru the valve. Regulating the volume of water flow requires only slight turning of the handle.

In this new Feather-Touch valve, Salter engineers have perfected an amazingly simple valve. It's a removable barrel type with no complicated working parts . . . just a stem and outer barrel or bushing which also serves as the cap. Conventional metal valve seats and washers have been entirely eliminated. Its finger-tip Feather-Touch opening and closing action is achieved by the hydraulic piston action of the stem sliding through two precision "O" rings. Working surfaces of these parts are precision finished to 3 thousandths of an inch tolerance and the stem is polished and plated to achieve the ultimate in smoothness. The above features make a valve which has operated on laboratory tests equal to over twenty years of drip-proof service. Write today for a catalog and start specifying Salter Prestige Feather-Touch fixtures. Your clients will appreciate their finger-tip, no-drip operation.

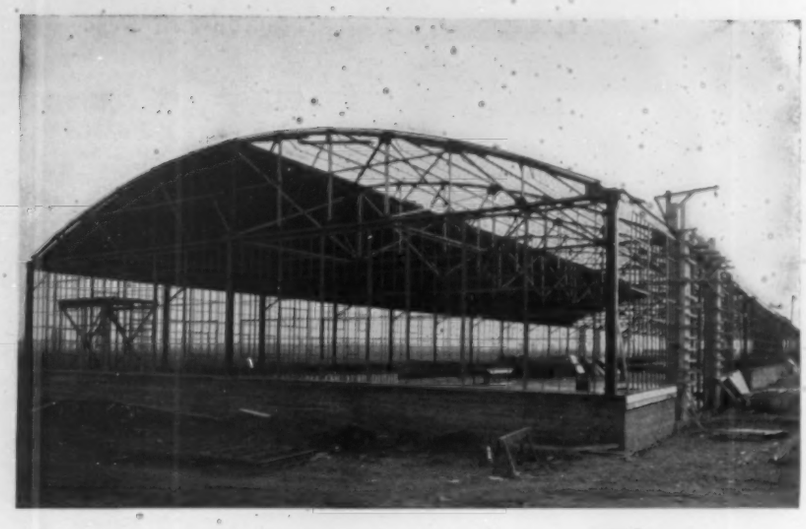
H.B. Salter MFG. CO.

PRESTIGE *Feather-Touch* FIXTURES

10 Ninth Street, Marysville, Ohio

and division THE GLAUBER BRASS MFG. CO., *Kinsman, Ohio*

Riveted *for Safety*



Bowstring Trusses *by*

MESKER STEEL Evansville IND.

RIVETING in truss fabrication means positive security and above all simplicity in the finer phases of steel construction.

The Bowstring Truss, a truly original Mesker development, provides greater strength and flexibility to meet every requirement of industrial or commercial construction, wherever clear floor space is required.

THE Mesker Bowstring Truss design eliminates columns. Greater floor space and the resulting finer appearances are but another feature of Mesker design. Mesker in truss fabrication, means safety, means better and standardized construction.

Mesker Steel prefabricated products are superior in every field — a true fact you expect from one of the oldest fabricators in the country.

WRITE TODAY FOR CATALOG AND FREE DESIGN INFORMATION

GEO. L. MESKER STEEL CORP.
EVANSVILLE 8, INDIANA

THE RECORD REPORTS

(*Continued from page 18*)

80 original drawings and renderings and several models of prize-winning and other designs entered in the Jefferson National Expansion Memorial Competition for a Mississippi waterfront memorial at St. Louis, Architectural League of New York, 115 E. 40th St., New York City.

June 10–25: 8th Antique Dealers' Fair, Great Room, Grosvenor House, Park Lane, London, England.

June 12–22: Construction Industries Home and Building Exposition of Southern California, Pan-Pacific Auditorium, Los Angeles, Calif.

June 15–17: 2nd Short Course in Hot Water and Steam Heating, sponsored jointly by The Institute of Boiler and Radiator Manufacturers and the University of Illinois, University of Illinois, Champaign-Urbana, Ill. (See page 164.)

June 21–25: 51st Annual Meeting, American Society for Testing Materials, Detroit, Mich.

June 30–July 3: National Catholic Building Convention and Exposition, Stevens Hotel, Chicago, Ill. (See page 14.)

July 6–10: 2nd International Store Modernization Show, Grand Central Palace, New York City.

July 21–23: Summer Convention, American Society of Civil Engineers, Olympic Hotel, Seattle, Wash.

COLLEGE BUILDING NEEDS ARE TREMENDOUS

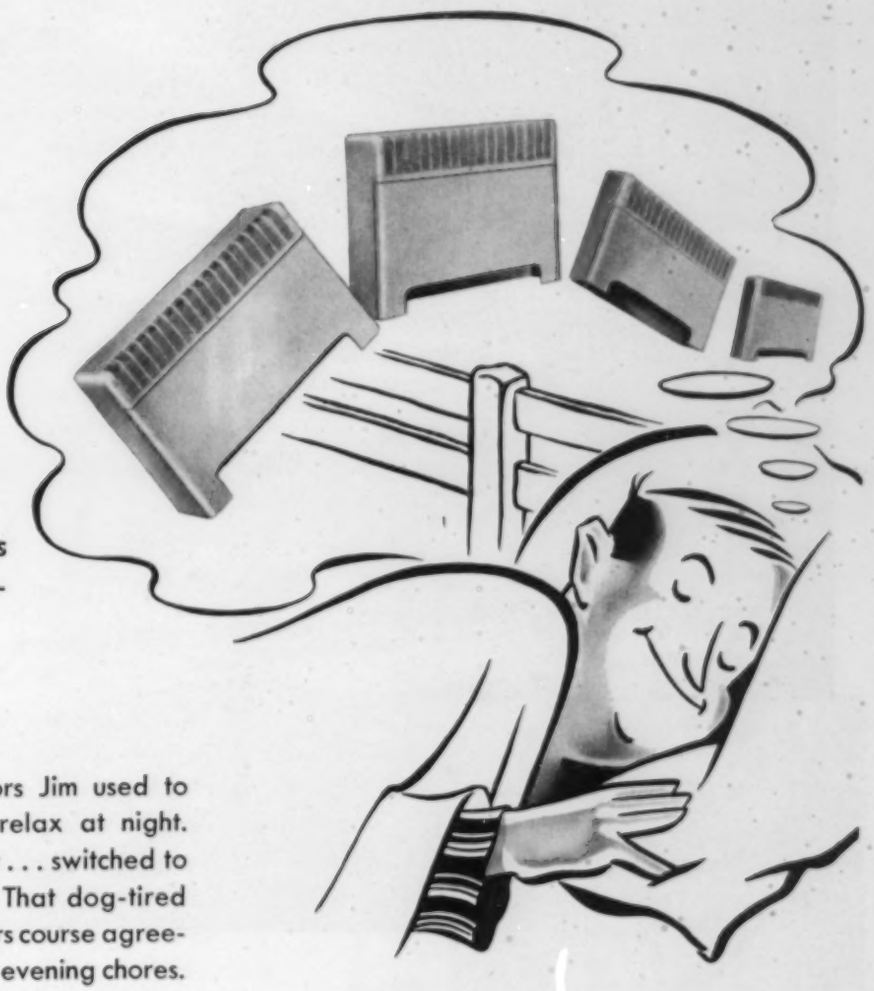
American colleges and universities need an additional 265 million sq. ft. of building space to accommodate the enrollments anticipated by 1950, according to a study prepared by Ernest V. Hollis and Associates for the Veterans Educational Facilities Program of the U.S. Office of Education, FSA.

This represents an increase of 78 per cent over the present 341,550,000 sq. ft., and is approximately equivalent to 133 Empire State or 76 Pentagon Buildings, the report states. At 1948 prices, the report estimates, "the additional space would cost approximately $2,650,000,000. With land, equipment, and miscellaneous costs added, the total would exceed $3,500,000,000. In addition, provision must be made for obsolescence cumulated during the war, for the customary loss of buildings by calamities, for higher educational standards, and for the plant needs of new institutions. These capital costs added to the preceding estimates would bring the total to $5,000,000,000."

What the report does not show is how the colleges are to finance this tremen-

(*Continued on page 156*)

"hundred, one... two... three... four..."



Jim Doakes counts Convectors
(He no longer counts sheep)—
And he finds it so easy
To drift into sleep

The heavy, old-fashioned radiators Jim used to install got him down. He couldn't relax at night.

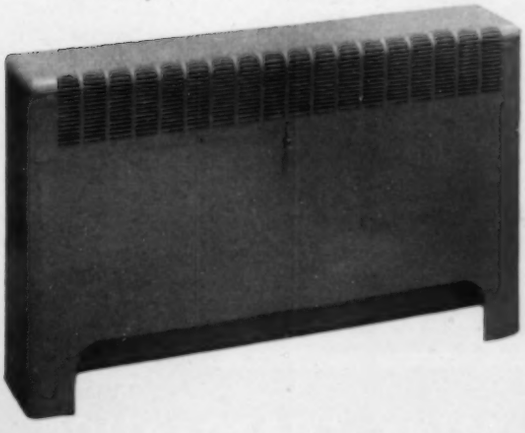
But he wised up . . . went Nesbitt . . . switched to the trimlined Model U Convector. That dog-tired feeling? It's gone. Nesbitt Convectors course agreeably through his mind as he does his evening chores.

So easy to handle . . . so light! They come in a protective carton ready for quick free-standing or semi-recessed installation on a two-pipe steam or hot water system (forced or gravity); the heating element doesn't even have to be removed from the casing.

The dressy furniture-steel cabinet pleases the eye. The curved-top grille not only gives the unit a classier look; it increases the heating capacity.

Boy, are the customers happy. Even, dependable, *convected* heat . . . smooth operation . . . fuel dollars saved. Folks tell other folks. Jim keeps getting new orders to fill from the 20 stock sizes carried by his wholesaler. He makes a nice profit, too.

Now Jim falls pleasantly to sleep each night—counting all the Nesbitt Convectors he's installed.



Nesbitt Model U Convectors are mass produced in 20 stock sizes—20" and 24" heights, and 20" to 64" lengths; capacities from 18.5 to 71 E.D.R. One cabinet, for free-standing or semi-recessed applications. Prime coated in gray. One heating element, for two-pipe steam or forced or gravity hot water. One style headers, for practically all connections. The time- and money-saving convectors, in protective packages. In stock at your wholesalers. Send for Publication 252.

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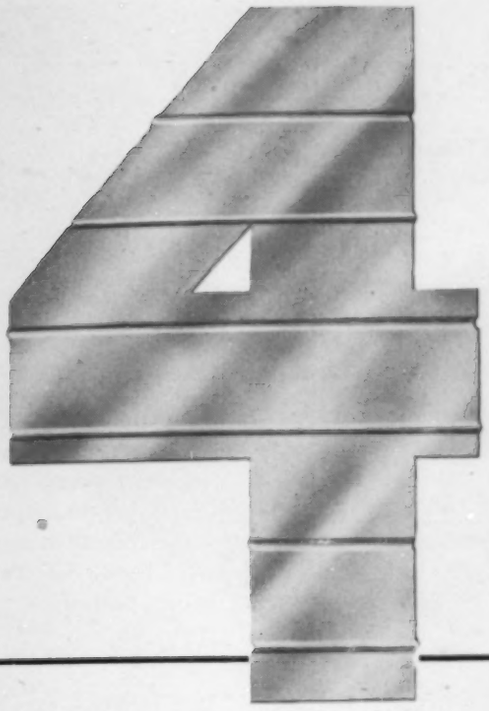

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see our CATALOG in SWEET'S FILE ARCHITECTURAL

Page 10A/3 and 10B/1
Architectural File

FLOORING

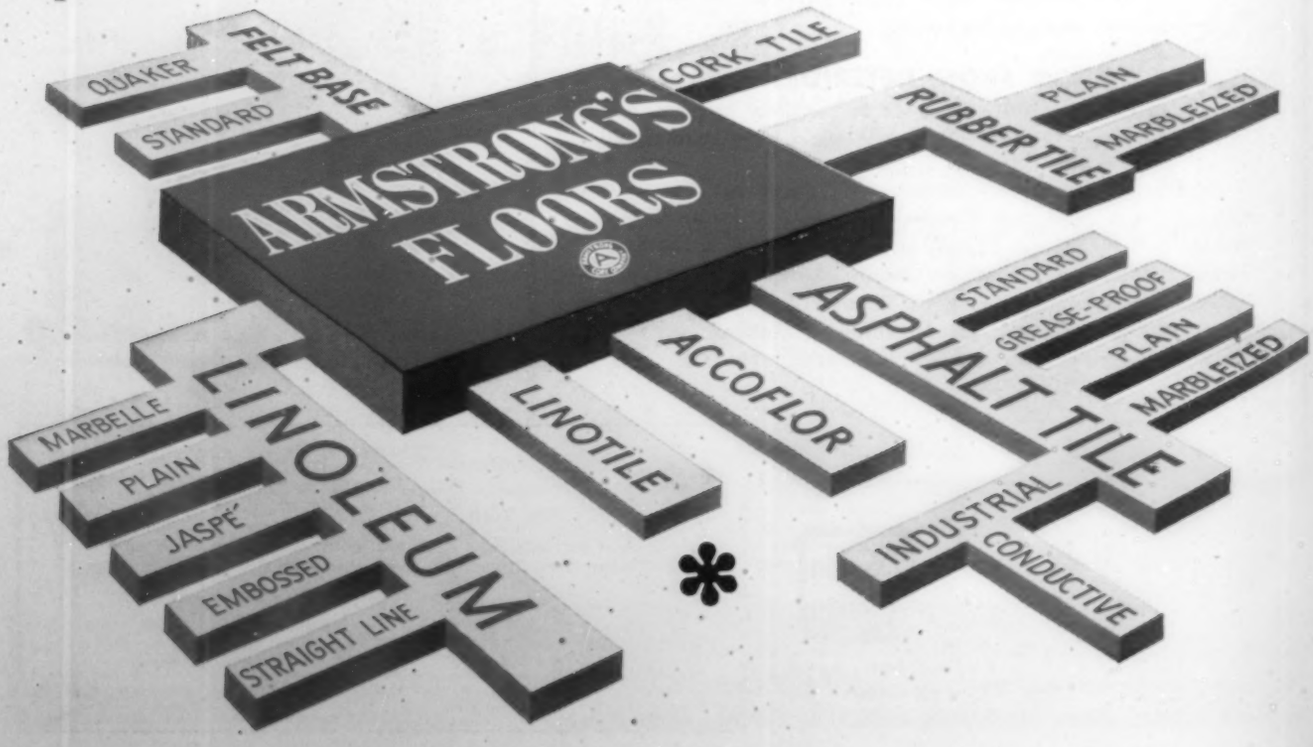
Do You Know This Flooring?*

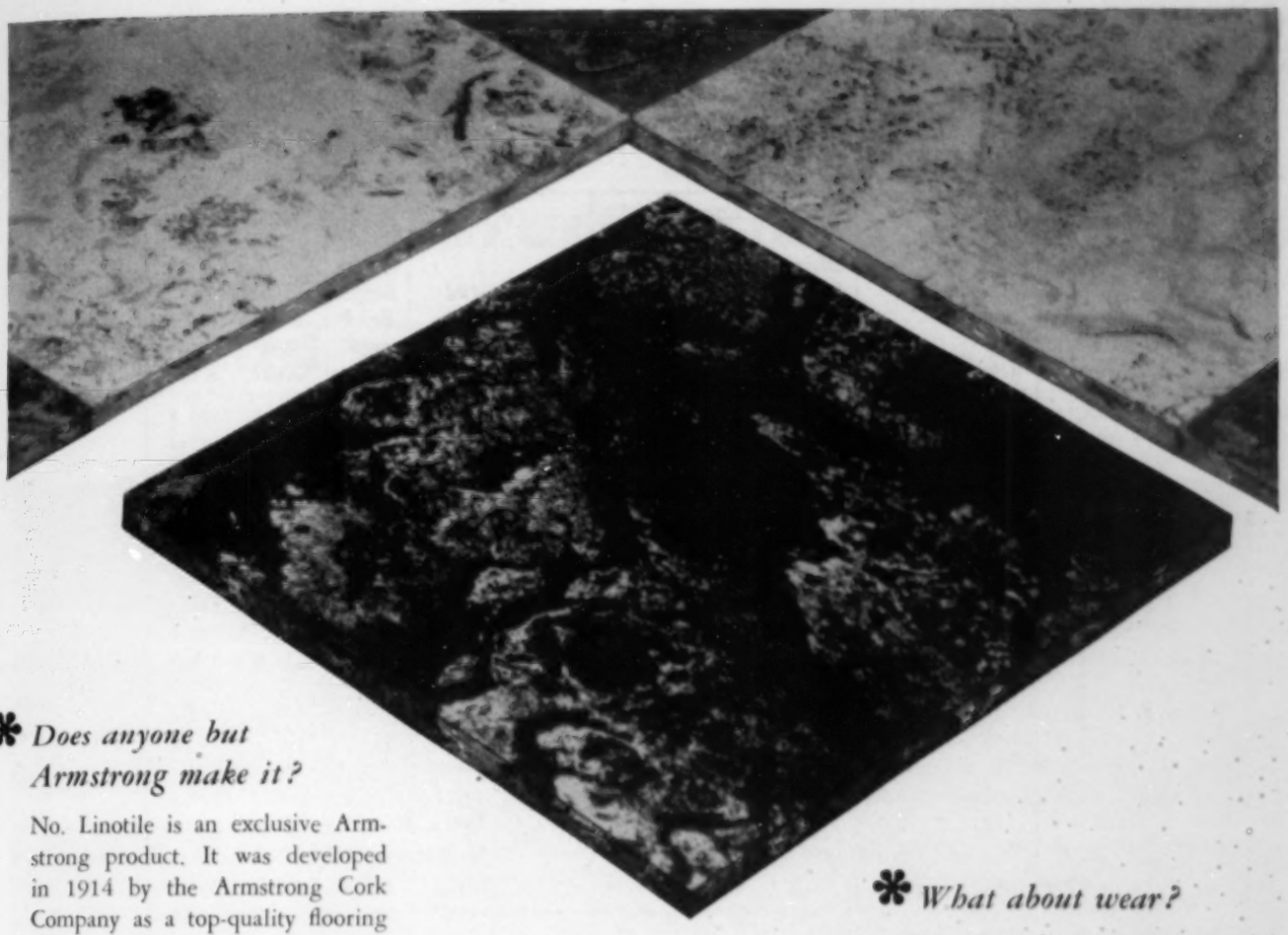
* *Is it really different from linoleum?*

Yes, decidedly. Linotile® is a much firmer, denser flooring material than linoleum. It has a resistance to indentation of more than 200 pounds per square inch—almost three times greater than linoleum. Although Linotile is made in tile form from a linoleum-type composition, it should not be confused with linoleum cut up into squares. Linotile is considered and handled as a resilient tile flooring in every step of manufacture and, in its finished form, has highly individual characteristics impossible to offer in roll form resilient flooring.

* *Why does it have such high resistance to indentation?*

Linotile's exceptional resistance to indentation is due to the method of manufacture. It is achieved partly by passing the mix through the calender rolls at a slower speed and at a greater pressure than is used for linoleum. This results in a more compressed flooring material. But the factor which contributes most to this characteristic is the curing process. Linotile is cured for a period approximately three times as long as for linoleum of equal gauge.





Does anyone but Armstrong make it?

No. Linotile is an exclusive Armstrong product. It was developed in 1914 by the Armstrong Cork Company as a top-quality flooring and is considered the original tile form oleo-resinous resilient flooring.

How many sizes and colors?

Linotile is a true custom flooring material since it is not generally carried in stock at the flooring contractor's warehouse. It is stocked in 36″ x 36″ sheets at the factory and cut to order for each individual job. Linotile is cut in squares of 2″, 3″, 4″, 6″, 8″, 9″, and 12″ sizes. It is also available in rectangular tiles in 3″ x 6″, 3″ x 12″, 4″ x 16″, 6″ x 12″, 6″ x 18″, 9″ x 18″, 12″ x 24″, 12″ x 36″, and 18″ x 36″ sizes. Linotile is available for immediate delivery in ten attractive marbleized colors including red, brown, tan, blue, green, yellow, gray, and black. Recently, all Linotile patterns were restyled to accentuate the graining and to brighten the colors.

What about wear?

Linotile ranks extremely high among the long-wearing resilient flooring materials. Observations made of actual installations and impartial laboratory tests show that Linotile has exceptional resistance to wear and abrasion caused by heavy foot traffic. Linotile will not crumble or dust under heavy traffic loads. The colors wear evenly since they go all the way through the material.

What about cost?

Linotile is slightly higher in price than linoleum of comparable gauge and about equal in price to rubber tile. The cost of Linotile is generally considered to be moderate when judged by the service it gives and its minimum maintenance requirements. The wide variety of sizes that are available makes it possible to obtain minimum installation costs for even complicated designs, because little time is required for on-the-job cutting.

What limitations does it have?

Linotile should not be installed over concrete subfloors in direct contact with the ground because of the alkaline moisture found in such floors. Linotile is recommended as a flooring on all well-ventilated suspended subfloors, wood or concrete, in commercial, monumental and public buildings, schools, and hospitals as well as in residences and small shops. Because of its resistance to indentation and its extra wearing qualities, Linotile is also well suited as a flooring for lobbies, corridors, and offices. Architects wishing samples, literature, and specifications for the installation of Linotile are invited to write any Armstrong district office or directly to the Armstrong Cork Co., Floor Division, 2405 State Street, Lancaster, Pennsylvania.

CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926—1929 = 100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data compiled by E. H. Boeckh & Associates, Inc.

NEW YORK

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	136.1	136.9	123.3	123.6	122.6
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1941	134.5	135.1	135.1	137.2	134.5
1942	139.1	140.7	137.9	139.3	137.1
1943	142.5	144.5	140.2	141.7	139.0
1944	153.1	154.3	149.6	152.6	149.6
1945	160.5	161.7	156.3	158.0	155.4
1946	181.8	182.4	177.2	179.0	174.8
Nov. 1947	229.1	231.4	219.0	217.8	214.2
Dec. 1947	231.3	234.1	219.8	218.4	215.1
Jan. 1948	238.8	242.7	225.1	224.6	220.0
Feb. 1948	239.2	243.2	225.2	224.8	220.1
	% increase over 1939				
Feb. 1948	**93.6**	**98.5**	**72.3**	**68.5**	**69.1**

ATLANTA

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	122.8	122.9	108.6	109.8	105.7
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1941	97.5	96.1	99.9	101.4	100.8
1942	102.8	102.5	104.4	104.9	105.1
1943	109.2	109.8	108.5	108.1	108.7
1944	123.2	124.5	117.3	117.2	118.2
1945	132.1	133.9	123.2	122.8	123.3
1946	148.1	149.2	136.8	136.4	135.1
Nov. 1947	187.3	191.4	165.5	163.4	166.2
Dec. 1947	189.3	194.0	166.7	164.5	169.4
Jan. 1948	191.9	196.7	168.6	166.7	171.4
Feb. 1948	194.4	198.5	172.1	172.7	173.8
	% increase over 1939				
Feb. 1948	**125.5**	**138.9**	**81.0**	**77.3**	**83.5**

ST. LOUIS

1920	118.1	121.1	112.1	110.7	113.1
1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1941	118.8	118.0	121.2	121.7	122.2
1942	124.5	123.3	126.9	128.6	126.9
1943	128.2	126.4	131.2	133.3	130.3
1944	138.4	138.4	135.7	136.7	136.6
1945	152.8	152.3	146.2	148.5	145.6
1946	167.1	167.4	159.1	161.1	158.1
Nov. 1947	212.1	214.0	193.6	192.5	194.5
Dec. 1947	217.5	220.9	194.9	193.4	196.3
Jan. 1948	220.6	224.0	198.1	200.9	199.6
Feb. 1948	221.4	224.8	199.4	202.3	200.4
	% increase over 1939				
Feb. 1948	**100.8**	**110.0**	**68.0**	**68.7**	**68.4**

SAN FRANCISCO

1920	108.8	107.5	115.2	115.1	122.1
1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1941	116.3	112.9	120.5	123.4	124.3
1942	123.6	120.1	127.5	129.3	130.8
1943	131.3	127.7	133.2	136.6	136.3
1944	139.4	137.1	139.4	142.0	142.4
1945	146.2	144.3	144.5	146.8	147.9
1946	159.7	157.5	157.9	159.3	160.0
Nov. 1947	207.7	206.8	196.2	200.2	199.5
Dec. 1947	209.7	209.3	196.8	200.6	200.2
Jan. 1948	212.7	210.5	199.8	206.8	202.9
Feb. 1948	213.8	211.5	201.6	208.9	203.9
	% increase over 1939				
Feb. 1948	**102.6**	**113.1**	**71.7**	**71.4**	**75.0**

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear whenever changes are significant.

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you **subtract** *installation time . . .*

add *years of rust-free service*

WHETHER it's a heating installation like this one, or a simple plumbing job for a small home, Anaconda Copper Tubes offer the advantages of comparatively easy installation, freedom from rust, light weight, smooth flow through solder-type fittings, moderate cost and long-term service.

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Anaconda Copper Water Tubes, Types K and L, together with solder-type fittings are supplied by wholesale distributors from coast to coast. Further information will be found in Sweet's, 1948, A-26-1. 4776-B

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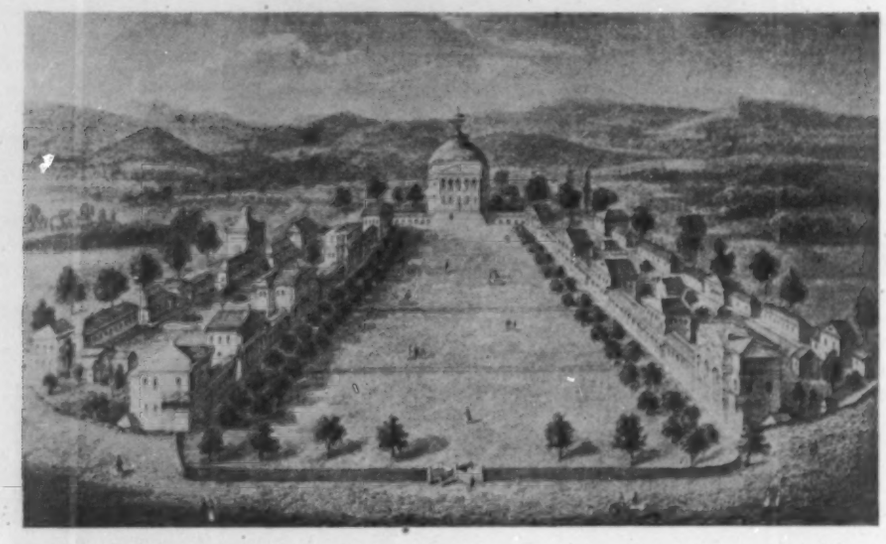


University of Virginia, designed by Jefferson. From "Thomas Jefferson Among the Arts"

A NEW JEFFERSON

Thomas Jefferson Among the Arts. By Eleanor Berman. New York 16 (15 E. 40th St.), Philosophical Library, 1947. 5 ½ by 8½ in. xviii + 306 pp. illus. $3.75.

The growing body of literature on Thomas Jefferson has received a welcome addition in this volume by Dr. Berman. Written as a doctor's thesis, the essay is annotated and factual in true scholarly fashion, with no wanderings from the straight and narrow paths of truth to gain readability. Despite this, the book is an interesting one.

As Horace M. Kallen comments in his introduction, ". . . never heretofore has there been any attempt to bring together and collate our third president's remarks on each of the arts, to view them in their relation to each other, and to interpret them in the light of what Jefferson has had to say about the sense of beauty or other esthetic categories, such as the sublime; or about the role of fine art in the life and labors of a people." This collating is what Dr. Berman has undertaken, the remarks stemming almost entirely from Jefferson's letters. The arts included are painting, sculpture, architecture, gardening, music and rhetoric, each of which is given a separate chapter.

The quotations used by Dr. Berman are all more or less familiar, but they have been selected with considerable skill, and presented in such a way as to create a definite picture. The reader thus can follow along with Dr. Berman as she presents the conclusions she has drawn from her study.

"That Jefferson had no philosophy of art, any more than he had a philosophy, in the professional sense," the author concludes, "goes without saying. His writings do not contain a body of knowledge about art organized into a clearly constructed, formal system. . . . To Jefferson art was an integral part of life. He looked upon life's daily round with the eye of a humanist and an empiricist. . . . Spokesman for the vitality and courage that informed the Revolutionaries of his country and age, Jefferson desired to make man's life on this earth as abundant as possible — and from the very beginning saw clearly the role that art could play in this abundance. . . . Art, science, education and statecraft were to him all alike weapons in the struggle for the freedom and happiness of humanity. Jefferson's faith in the innate goodness and ultimate perfectability of man never wavered. With the vision of an artist and the faith of a lover of people, he saw freedom as the first step towards happiness — and art as one of the first steps towards freedom."

HOUSE OR HOME?

Houses for Family Living. By Frederick Gutheim. New York 16 (10 E. 40th St.), The Woman's Foundation, Inc., 1948. 8 by 8 in. 52 pp. illus. 35 cents.

What should the home be like physically if it is to serve its purpose creditably? Late in 1946 the Woman's Foundation assembled the Conference on Housing for Family Living at Rye, N.Y., in an effort to answer that question. The findings of the 52 experts assembled — architects, builders, housing officials, home economists, medical and health authorities, psychologists, child welfare experts, social workers and the like — form the basis of this booklet. (For a still further development see Mr. Gutheim's article on pages 118–121 of this issue.)

"The houses in which our families live," says Mr. Gutheim, "it goes almost without saying, are obsolete. Either they were built in years past with quite a different kind of family living in mind, or they are being built today with scant appreciation of the values in family living that increasing numbers of people consider most important." What is needed is a house which will somehow meet the changing requirements of a family which goes through four distinct periods: the early, childless years; the crowded years of babies and playpens; the peak years of adolescent energy overflowing every room; and the later years when the family once again has shrunk to an intimate partnership. Mr. Gutheim and the experts have not attempted to design this versatile house. All they have done — and it is a big step in the right direction — is make a study of the needs and an analysis of what should be done next. "Progress," they conclude, "lies in two directions. We need to know more about family living requirements. We need to apply right now what we already know."

HOUSE ETIQUETTE

The Personality of a House. By Emily Post. New Revised Edition. New York 10 (153 E. 24th St., Funk & Wagnalls Co., 1948. 6 by 9 in. xvi + 492 pp. illus. $5.00.

This new edition of a volume first published in 1930 has been modernized right up to the lastest electric below-the-sink garbage disposer and the Westinghouse Precipitron air-purifier, but it remains from cover to cover filled with the personality of Emily Post, author of ETIQUETTE. Gracious and charming, it frowns with discreet disapproval at the all-I-want-is-a-roof-over-my-head school. "The house which is to be your home," it says firmly, ". . . should unmistakably suggest *you*."

A good many people, including many architects, will shudder at the pages of illustrations, every one of which is of a nice Colonial home complete with flowers and vines, chintz and four-posters. The accompanying captions are even more gracious than the photographs: "A sweet house," "A room of supreme personality and charm," "Entrance to a house of charm," "A gentleman's room of formality and distinction," "Couldn't be prettier." But Mrs. Post, of course, is not writing for the architect or the lover of the modern house. The vast majority of her readers will be earnest young homemakers whose taste runs to chintz anyway; they will like both photos and captions, and they will find a great deal of useful information in the text.

Basically, underneath the sweetness and charm which frosts it like a birthday cake, this is a sound and wholesome volume. Into its close to 500 pages it crams a short history of architecture, a résumé of domestic architecture in this country, chapters on building and re-

ARCHITECTURAL

RECORD

SMALL HOUSES, UNLIMITED

EVERYONE is thinking about houses these days — from the G.I. who needs one and is thinking about what he wants and how to get it — to the family that has one and is thinking how lucky they are to have what they have (even though they'd like to have a better one). Movie goers are being treated to the humorous side of building a custom-made house and are seeing themselves as potential Blandings. And they will be wiser Blandings for their vicarious experience — perhaps they will even listen to their architects' warnings and admonitions.

And no magazine neglects the house as a major topic. The "home" magazines are enjoying peak circulation and avid readership. Of books for home-builders there is no end, a constant stream of new and better books giving more and sounder advice to those who would build. It is gratifying to find that the best of these books are either written or edited by architects or at least are full of illustrations of the works of our most imaginative and intelligent architects. Lecture courses in house planning, largely given by practicing architects and sponsored by colleges and universities, are enjoying unprecedented attendance and eager attention. Behind all this, research, however hit-and-miss at the moment, is going on to determine family needs and desires and how to meet them in better ways. Foundations,* associations, universities, manufacturers, individuals and even governments are busy searching for better solutions to the problem.

All this augurs well for the rapid development of the new advanced domestic architecture and for the widespread acceptance of greater freedom of plan and design, of new ideas, new materials, new techniques — not only in the house itself but in the community plan, the neighborhood environment and facilities. Large scale developers will inevitably, if belatedly, take advantage of this growing popular acceptance so that the home-buyer as well as the home-builder will enjoy the advantages of the new freedom in modern architecture.

We must look, therefore, for an increasing and continuing demand for architectural services in the house field. And the architect alert to the potentials must be prepared to retain his established leadership in design, not only by providing pace-setting innovations in custom-designed houses, but in service to both the large-scale builder and the small-budget individual home-builder as well. More thought and ingenuity must be given to ways and means of reaching directly this larger market, whether by standard-plans and limited-service or some other yet-to-be-developed scheme. The opportunity for better houses, unlimited, is in the lap of the profession. How best can it be capitalized?

* See pages 118, 141 and 146.

Kenneth K. Stowell

EDITOR

WHAT BUILDINGS ARE BEAUTIFUL?

An Address Delivered at the Ann Arbor Conference on Esthetic Evaluation, University of Michigan, April 3, 1948

By Joseph Hudnut

WHEN I was very young — four years old as I remember it — I heard my mother say that she had engaged a perfectly beautiful laundress and, being by endowment curious of feminine charm, I hid behind the kitchen sink to have my first look at beauty. My first look and my first disenchantment. The face of my mother's laundress was as yellow-red as the soap which she exercised upon my jumpers and stockings and her figure was, like that of her tub, round, stable, and very wide.

My mother had spoken in a metaphor, inaccessible to my understanding. She had used the word beauty to signify not an attribute of the laundress but a quality of workmanship for which the laundress, irrespective of her appearance, had become an embodiment. That which was called beautiful was neither the laundress nor the objects of her laundering, but the performance to which these were machine and medium, a performance made express and visible in the comforting, crisp cleanliness of linens, pajamas, towels, and pillow-cases. The work which was done was well done; the task and the processes were perfectly mastered; the end was attained completely and without excess; and my mother, perceiving this unity of intention, method and product, cast over all of these the aureole of beauty.

In my mind the basket of my mother's laundress, thus filled with the magical effects of the art of laundering, stands as type and symbol of all that wilderness of beauty which is identified in our minds with skill in making or doing: the beauty entangled with our delight and surprise and wonder at man's ingenuity and invention — with the release which a fragment of perfection brings into our imperfect world.

In the basket of my mother's laundress, awaiting my tardy recognition, lay the silver salt-cellar made by Benvenuto Cellini and the *cadenza coloratura* of Lily Pons, the twenty-inning triple-bagger of Ted Williams and the sonnet that Keats composed for Fanny Brawne, the exquisitely-timed bomb that burst above the roofs of Hiroshima. In that basket lay the splendor and ever-new adventure of Fifth Avenue: the sapphires in the window at Tiffany's, the black and gold chocolates at Rose-Marie's, the subtle bathing dresses at Bonwit-Teller's, and at Brentano's the gem-encrusted missal from the cloister of S. Benoit-sur-Loire. The Lincoln cabriolet, custom-made and sleek and driven by a smart chauffeur, lay there — and the hat of the delicate lady who rode within. The gilded Sherman and his fragile angel was there, and the Lady of the Fountain who takes her eternal bath under the thousand eyes of the Plaza Hotel; and in that basket lay also the marble façade of the New York Public Library, all garlanded with Gallic imageries, innumerable of moulding, console and plump baluster, of nymph-filled spandrel and foliated keystone, jubilant of chaste goddess, stern lion and leaves of the lush acanthus.

To the majority of men living in our mechanized world such beauty, immediate and virginal, returns all that could be asked of architecture. Architecture, except as it exists in history, consists of buildings built of fine materials, sound in techniques and bravé in ornament and invention. The architect exists as supercraftsman and jeweler, scenic artist and pleasure-merchant. He is a beautiful architect

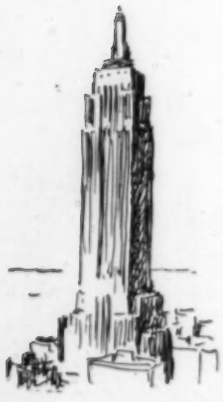
whose storehouse is most completely stuffed with precedents, styles, decorative amenities, and the amusing novelties which are mistaken for genius.

The rôle is a pleasant and rewarding one; to refuse it would be to extinguish our profession; nor is there any morality or logic of design which demands of us so inhuman a sacrifice. It happens, nevertheless, that there are other measures of beauty. One of these measures is that afforded by *form*.

The New York Public Library is not, as I have hinted, one great confusion of ornamental episodes. Anyone who looks even hurriedly at the New York Public Library can hardly fail to be aware of an order in the disposition of its parts. A central pavilion pierced with deep arches anchors the building to the fine terrace on which it stands; from this pavilion two peristyles march equal distances right and left and end in identical little temples; and the chiseled ornament dances across the surfaces in rhythmical patterns. The intention of the architect was clearly so to relate all of these that taken together they would present a unity; and if we are persuaded of that unity, finding it complete and without adventitious parts or discordances, it may happen that we will find in such unity a mode of beauty.

Form is a name which we give to a unity thus apprehended among a variety of elements. The *Sistine Madonna* carries her child at the center of Raphael's canvas; the curtains part, right and left, to admit her to our earth; the sky on all sides gives her an increase of radiance; the saints kneel at either side; and even the angels worship in a symmetry. So Lincoln, seated in his temple, framed by systems of peristyles, steps, reflecting basin and disciplined foliage, is made an element in a pattern whose beauty, surely, transcends even as it includes the beauty of Doric column carefully copied from the Parthenon and of marble block set exquisitely on marble block.

We do not need to be told that color and sound, idea and image, constructed form and space exist not singly but in combination, but our attention is not always centered upon their relationships. There is an art, sometimes called architecture, which consists in conceiving, developing and establishing such relationships. The apprehension of that art carries us into a realm of beauty which may be conceived as apart from the nearer landscapes of craftsmanship. Until we have become interested in form — until that interest controls our perceptions of buildings and our thoughts about them — we will know very little about buildings. We must see buildings, as we see pictures, as networks of relationships: of relationships in three dimensions "occupying space and with space around," in which stone and steel, mass and space, line, color and light are brought together and fused.



That way of seeing demands obviously some expectancy of a beauty to be unfolded and the firmness of attention which such an expectancy might sustain. Relationships do not leap into our vision as do color, light and technical dexterities; they do not force themselves upon eyes that are focused upon the processes of art; nor are they accessible to the passive mind indolent of new knowledge and experience. You have to care about relationships to see them; you must search them out, establish them in the mind, hold them there as you might hold the invisible structures of mathematics.

Not everyone will take the trouble thus to acquaint himself with form. We are too preoccupied with technologies, with ways and means, with promises of comfort, to bother about this alien etiquette of architecture. We deny ourselves the beauty of form, being absorbed in those practical matters which make true judgments of value impracticable.

I think that this explains in part our dislike of Renaissance architecture, which

rests upon contemplation and scholarship, which takes for granted a process of learning, which yields its secrets only to minds disciplined to discrimination and expectant of subtleties.

Sanmichele addressed his façades to that aristocratic mode of seeing. He assumes that you will look beyond his bold and original outlines to the harmonies into which these are divided, to the nice adjustment of void and solid, the musical progressions of window, arch and column, the contrast of rusticated basement against the elegance of classical peristyles, the enrichment and accent of his careful ornament. Our impatient vision will not stay for this beauty. The Empire State Building can be taken in without time or effort: taken in, swallowed, and digested in twenty seconds.

Form demands a principle, and its principle must be operative within an area defined by a habit of seeing and understanding. Each of the great traditions of architecture arrived at such a synthesis. Each has its plan of organization and its peculiar components of form selected from the complex totalities of buildings. Each arrived at its ideal of form as much by exclusion and repression as by emphasis and development. The large effects of the Baroque, for example, are paid for by some deficiencies in the treatment of surfaces and materials — this *theater* could not attain its splendor by an architect too solicitous of refinements in proportion and the perfect control of line; nor could the Renaissance architect guard his serenity and elegance in the presence of cataracts of light falling over undulating walls.

Our standards of excellence will inevitably change with our interests, with the character and range of those elements of buildings which arrest our vision. We cannot see the Renaissance except as abstraction made up of a limited range of elements selected from the debris of Rome: all the more so when we use it as appliqué and mask. To know it we must learn it, as we learn a foreign language. This is not to say that form must comprise all the elements of a building; on the contrary, it cannot be explained except in its relation to the fact of selection — to the mind which selects, arranges, accentuates, represses, and distorts.

No art offers the form-giver so wide a range of selection and combination as architecture. Space, for example, except as space may be represented in painting and in the theater, is the exclusive possession of architecture: space which may be confined and shaped, channeled through nave and aisles, gathered together in crystalline patterns, or made to flow upward into sunny domes. Space may be static, heavy and oppressive, as it is under the Roman Pantheon or filled with splendor as it is at Amiens. Structure also is our peculiar province: only the forms of architecture may comprise the effort of columns to sustain a pediment, the thrust of arches against walls and abutments, the weight of a dome, the energy of a steel frame. The thousand arches which in the Colosseum lifted the populace of Rome above the oval arena may exist in the mind as elements of pattern as distinct as the arcaded façades which hide them from our view, and the vaults which hold the dome of Michelangelo over the grave of St. Peter enter into and sustain the grandeur of the whole, not by their shapes and proportions merely, but by the tremendous energies arrested within them. Form in architecture includes these living forces; includes also the light which plays over and reveals visible shapes of buildings, the colors, textures and ornaments which enrich these shapes, the sculptures and paintings, the metal grills, wood carvings, and useful objects which stand against them; and form in architecture may also include the

terraces and walled areas upon which buildings stand, the gardens which surround them, the squares and streets laid out before them, and the city into which their rhythms extend. The Washington Monument includes the reflecting basin, the Mall and the distant Capitol; the *Salute* is a water-lily which draws its life from the blue sea of Venice; and the dome of St. Paul is an equestrian statue pedestaled on the red-brick roofs of London.

The beauty which is identified with technical skill — the beauty of materials, of crafts, of the textures, colors and ornaments which are the products of skill — provokes a universal and constant admiration; the beauty of form must be sustained by fashion, by knowledge, and by a disciplined vision. That is a circumstance equally annoying to the academician in search of standards and to the esthetic speculator in search of truth, but it is a circumstance very fundamental in the experience of beauty. We have to open the stubborn eyes of our students before they will discover a beauty of form in the art of China or Africa, nor is there any pioneer in the long art of architecture who did not need his apologist and interpreter.

Fortunately there is still a third mode of beauty in architecture — one not irrelevant either to technical excellence or to form, and yet not inseparable from these in the mind. People who are unaware of methods and materials in buildings and indifferent to form may nevertheless have feelings about them. A church, covered with lichen and set among ancient trees and tombstones, may awaken a sense of melancholy (in the presence of most of our churches it is hard to have any other feeling), and a great chimney embraced by sloping roofs and dormer windows may remind us of the security and loyalties of our home. We say that the church *expresses* melancholy, meaning that it conveys to us the melancholy of those who built it or perhaps the intention of the builders to evoke that sentiment in us. The Washington Monument expresses the character of Washington, the Taj Mahal expresses the splendor and mysteries of India, and the Chicago Opera House expresses the decadence of operatic art. Often we find such expressions beautiful. They afford us a beauty which may be and often appears to be quite apart from the experience of form or from a recognition of skill in construction and ornament.

Such beauty has its origin in associations — and may I remind my readers that associations are quite as legitimate a road for art as they are for science? We think in associations, and associations are as inescapable to sentiment as they are to thought. The open hearth confirms so persuasively the idea of home as to be mandatory in the art of the most audacious of fundamentalists. The dome on the state capitol is — or was — as direct an avenue for whatever sentiment may be appropriate to representative government. No honest-to-goodness American would for a moment trust his money to a bank whose temple is unprefaced by four columns of unembezzlable granite; and for my part I shall always refuse to admit the worth of any Raphael unless I must climb at least forty marble steps to reach it.

These are symbols which we cannot divorce from our judgments of buildings — nor should we wish to do so. (Without them there would be little architecture between the Mississippi River and the frontier of California.) Nor should we desire to escape those more subtle associations which, through habit or careless use of metaphor, have become inherent in the abstract forms of geometry. The horizontal plane, we say, expresses calm; the vertical line, aspiration; the hemisphere, universality. Each of these contains a little story — a story told in the language of architecture.

WHAT BUILDINGS ARE BEAUTIFUL?

Count me a Victorian, if you will, but I confess that I like a story in everything: in church and skyscraper and suburban house; in the Temple at Sunium and the quaint Asphalt Manufacturing Plant of the Borough of Manhattan, in the chairs of Alvaar Aalto and the sculptures of Alexander Calder, in sunset, sea and parallelogram. The artist has every right to speak to us in symbols, and this would be a dull world if he did not do so.

Symbols, nevertheless, are not the only resource of the architectural story-teller. There is a more direct — and I think more moving — way in which buildings may address us. They may speak to us in patterns shaped by the life they are meant to shelter, by the uses to which they are put, and in that way tell us stories of a unique and changing world for which no symbols have yet crystallized. They may tell us stories about ourselves; stories charged with truth and made the more eloquent by that sweet ornament.

Fifty years ago, in a city spellbound by the World's Columbian Exposition, Louis Sullivan made a famous pronouncement which ever since that time has thus directed the eyes of architects from symbol to realism. *Form follows function.* The form of a building must be appropriate to its purpose: the form of a building should tell the story of its life, of its inward activities and outward affiliations. Whatever idea may be the generator of a building — the idea of government, of manufacture, of the family — imposes upon buildings relationships peculiar to itself and these relationships clearly established are the deepest source of architectural character.

The principle had been known to the Egyptians, was the basis of architecture in Greece and Rome, was creed and principle of practice among the cathedral builders, cardinal in the art of Michelangelo and Mansart, accepted and followed in the prim buildings of our colonial ancestors. It had been formulated, moreover, in the writings of a dozen essayists and was in the XVIII Century a familiar basis of architectural criticism. But words, like buildings, have little force and often little meaning, apart from the persons who speak them and the circumstances under which they are spoken. That which gave wings to the words of Sullivan was the excesses of eclecticism which oppressed his time. The White City, innocent enough as pageant and scenic architecture, shone like a flame behind his words, and above the roofs of our cities a thousand skyscrapers lifted their tortured heads to din the golden aphorism into our ears. We were ready for that reminder, having already arrived at an ethical concept which identified the useful with the good. The name of Louis Sullivan became a guide for our seeing, a measuring rod for our judgments.

We perceive since then that it is idea which makes a building modern: modern, I mean, in expression no less than in techniques and use. When we build for modern ideas — for democracy, for evolution and progress, for science as the tool of the spirit, for man as integral to social complex, and for the human relationships which these engender — these become, through the strange alchemies of the mind, factors of beauty in our buildings. We understand them as the content of a new architecture. They give meanings to our buildings; they capture the imagination of those who live in a present world more surely than those buildings which have ceased development and which contain only the ideas of the past.

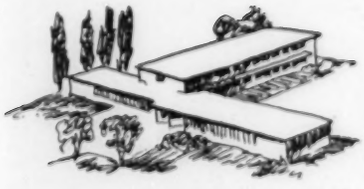
It is through the active force of ideas that our buildings proceed toward modernity. Structural integrity, clarity in organization, the new type of plan, our

million mechanizations, functionalism and constructionism, the esthetique specific to steel — these are consequences, not causes. These are the outward evidences of an inward ferment. Describe them, measure them, argue about them, if you will — and about the genius to whom they are material and aspiration — but you will not learn from these the secret of modern expression.

If our houses break through their prim Colonial molds and open their hearts to sunshine and to nature, that is not because M. Le Corbusier discovered a lyricism in plate glass or Mr. Wright the euphonies of flowing space, but because these changes were imperative to changing demands and understandings in family life and to a new candor and freedom in the art of living together. That is an art which we have practiced from very ancient times; an art which indeed created family itself, oldest of human institutions; and which created and is creating the house, constant of theme, innumerable of appearances. The engendering force was not the functions of shelter but the functions of the home, to which wood and stone and glass are outward clothing and expression.

That which is true of the house is true of every building planned for human use: for school and hospital, church and university, court house, city hall, and the buildings of commerce. Our schoolhouses throw down their classical walls not because classical walls are illogical to steel construction but because classical walls are an embarrassment to those new arrangements in plan and space which are demanded by that democratic service which is rebuilding, not the schoolhouse merely, but the school. It is for that reason that our hospitals, libraries and universities forget their ancient symmetries. For that reason our court houses and capitols overthrow their heavy domes; and our giant factories slowly recognize the humanity they shelter beside their machines.

Our buildings are live creatures and submit impatiently to the imprisonments of our traditions. They are growing creatures, changing constantly with changes of purpose and method, and they change also with our reassessments of relationship and responsibility in the structure of society. They change with economic change, with the rise and fall of political doctrines, with the standards, rituals and conventions of social behavior, and with our knowledge of right and wrong. Our architecture receives all these, the multiplex currents of our civilization: receives and channels them and is molded by them.



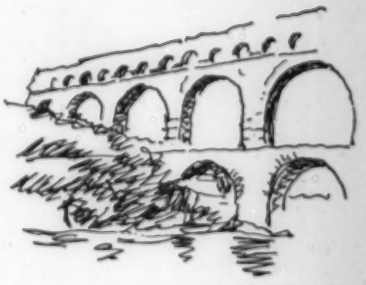
Our buildings are beautiful when they take part in that drama. Our buildings are beautiful when they are plastic to new circumstance, however uncongenial to antique forms; when they are organic to our present life, whatever its conflicts and inconsistencies; when they exhibit a need to reconcile new feeling with a universal feeling continued from the past into our time. Buildings are beautiful, as soldiers are beautiful, when they show the signs of conflict and victory.

It has occurred to only a few that beauty might thus reside in more than one aspect of a building. Estheticians, who write libraries to define a word, will not applaud a critic who accepts all their theories at one time and sees no inconsistencies among them. My spoil of beauty is too wide and rich for those who would put beauty in a test-tube or limit her sovereignty to a province which can be measured by a science of semantics; but I see no reason for putting beauty in a test-tube. I see no reason for identifying beauty exclusively with pleasure in things seen or with irrational preferences in form or with emotions provoked and intensified by form, or with goodness and truth or with the mutation of nature or with the expression of the absolute. It should be evident that beauty, a quality which exists only in the mind, comprises all of these.

This little fragment of dialectic is prelude to a discussion of still another aspect

WHAT BUILDINGS ARE BEAUTIFUL?

of beauty in architecture: I mean that beauty which time builds into buildings. There is in buildings which have sustained the siege of centuries a magic which holds us irrespective of form and use and technical excellence. The temples of Egypt, the pyramids of Yucatan, the Roman arches thrown across the Gard; these, the wreckages of distant worlds, are radio-active with a long-gathered energy which cannot be explained by the laws and practices of our design. They belong, not to architectures but to civilizations, and they have in them the beauty of civilizations.



Please understand that I am not inflicting upon my readers that tedious saw about architectures expressing civilizations. So long as warlike peoples build castles and devout peoples build temples, architectures will express civilizations; but that truism is not so profound as to need more than a million restatements. I am thinking, rather, of buildings as fragments of time — of time crystalized and made visible and charged with time's sweet-bitter power to enlarge and kindle the heart — and I think that that power has very little to do with the pure or abstract or logical attributes of architectures.

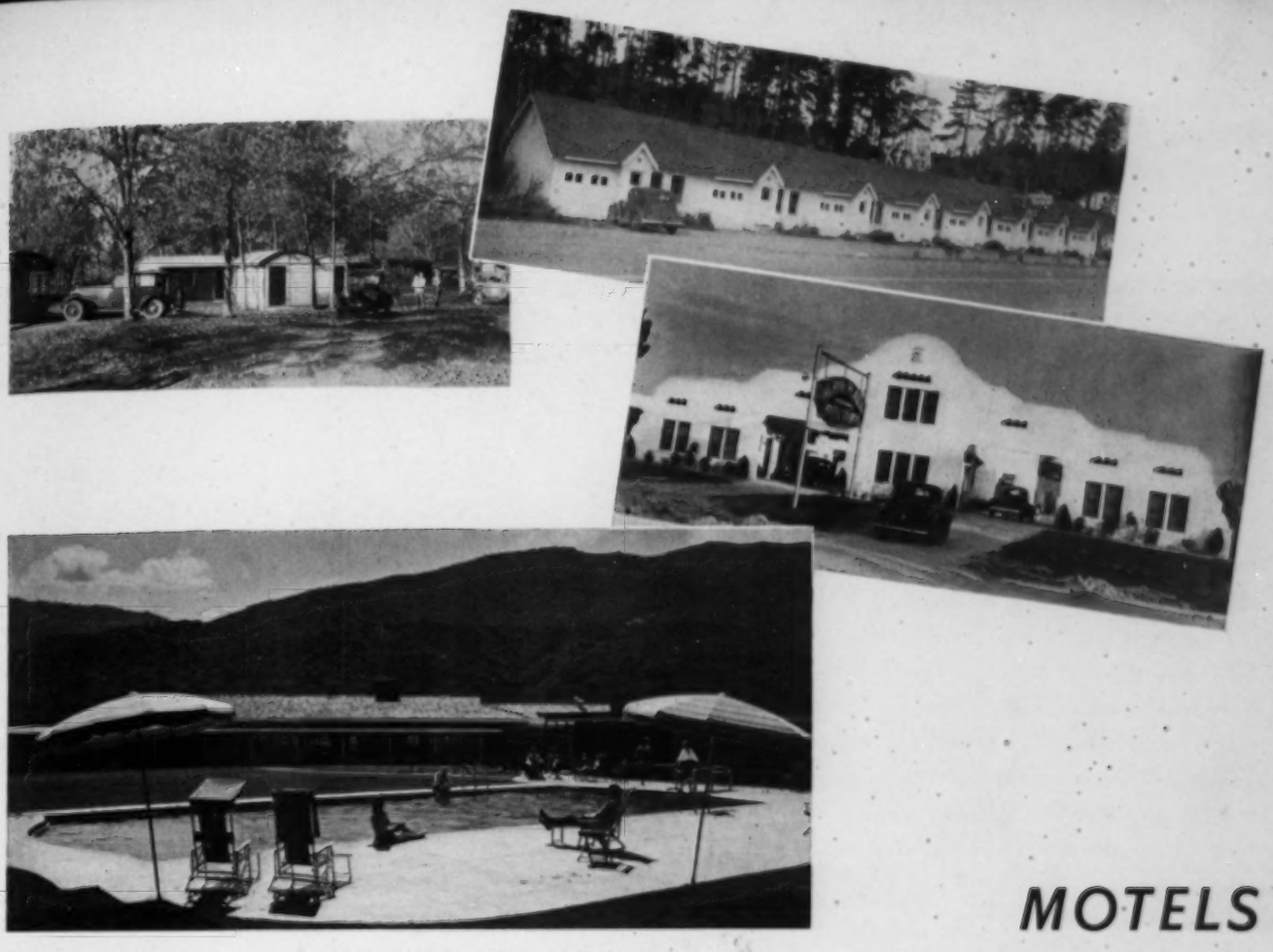
When we think of the Parthenon it is not the Doric Law which holds us. Around these pale columns lie the great events and great renowns that were Athens. The knights and the maidens of Athens still bring to this altar their offerings; the applause of the theater still reaches it and the noise of the waves against the thousand ships that were counted in the bay of Salamis. When we think of the Alhambra we remember, inseparable from fragile arch and cool patio, the fairy dream-world of the Arabians: the sensual splendor honey-combed with subtle thoughts and the dying embers of that uncompromising faith which had launched a desert people forth upon the conquest of the world. The earth is strewn with such splinters of history around each of which the mind builds an iridescent and unique mirage; around Sans Souci where Frederick still entertains Voltaire, around the Crescent of Bath and the urgencies of Sir Anthony Absolute, around Independence Hall and the reasonable voice of Franklin; and who shall say that such beauty, which everywhere illumines these, the precarious witnesses of civilization, is illegitimate to the thousand-faceted art of architecture?

Architecture has in it this virtue: it proclaims not only the splendor of individual cultures but of human culture as a whole. Architecture writes the story of humanity, not in episodes only, but in its totality.

The theme which with infinite variations threads that long narrative is also the theme of architecture which holds before us, in a thousand symbols scattered over the earth, the never-attained ideal of peace on earth. The buildings which witness the great traditions of architecture — the temples, cathedrals, palaces and cities — vast intricate patterns of space and light, of structural weight and energy, of utilities and mechanisms, of carvings, color and story — are affirmations of man's authority over his environment, of his capacity for pattern and reconciliation, of his ability to overcome the discordant and hostile forces which array him or press upon him from within.

Standing in the transept of Chartres I could believe that man — whose armies blacken the earth, whose engines of destruction ride the distant-margined seas — this savage whose single bolt destroys a city and all who live in it — may yet build for himself a home symmetrical with this vast synthesis.

That promise also is beautiful.



Top left, *Tourist Court Journal*; Top right and center, *Hotel Management*; Lower left, Morley Baer

MOTELS

MOTELS MOVE INTO THE SELECT CIRCLE

In the pages that follow it should be amply demonstrated that motor courts, or "motels," have reached the point of architectural importance. Moreover, it takes little reading between the lines to see that their impact reaches not only the city hotel but also the resort hotel. They might almost be said to represent a new way of vacation life.

Certainly the highway hotel has long since grown out of its early "Rooms for Tourists" or "Cabins for Rent" stages. In the sun-belt states — California, Arizona, Texas, Florida — the motel has become a full-blown resort hotel, complete with luxurious rooms, expensive restaurants, even bathing girls. There are swimming pools, tennis courts, private patios, room service, lounges, bars, and so on. Gone are the days, too, when the city hotel manager could scornfully say, "Only a certain type of people stay in those things." In short, motels are now big business.

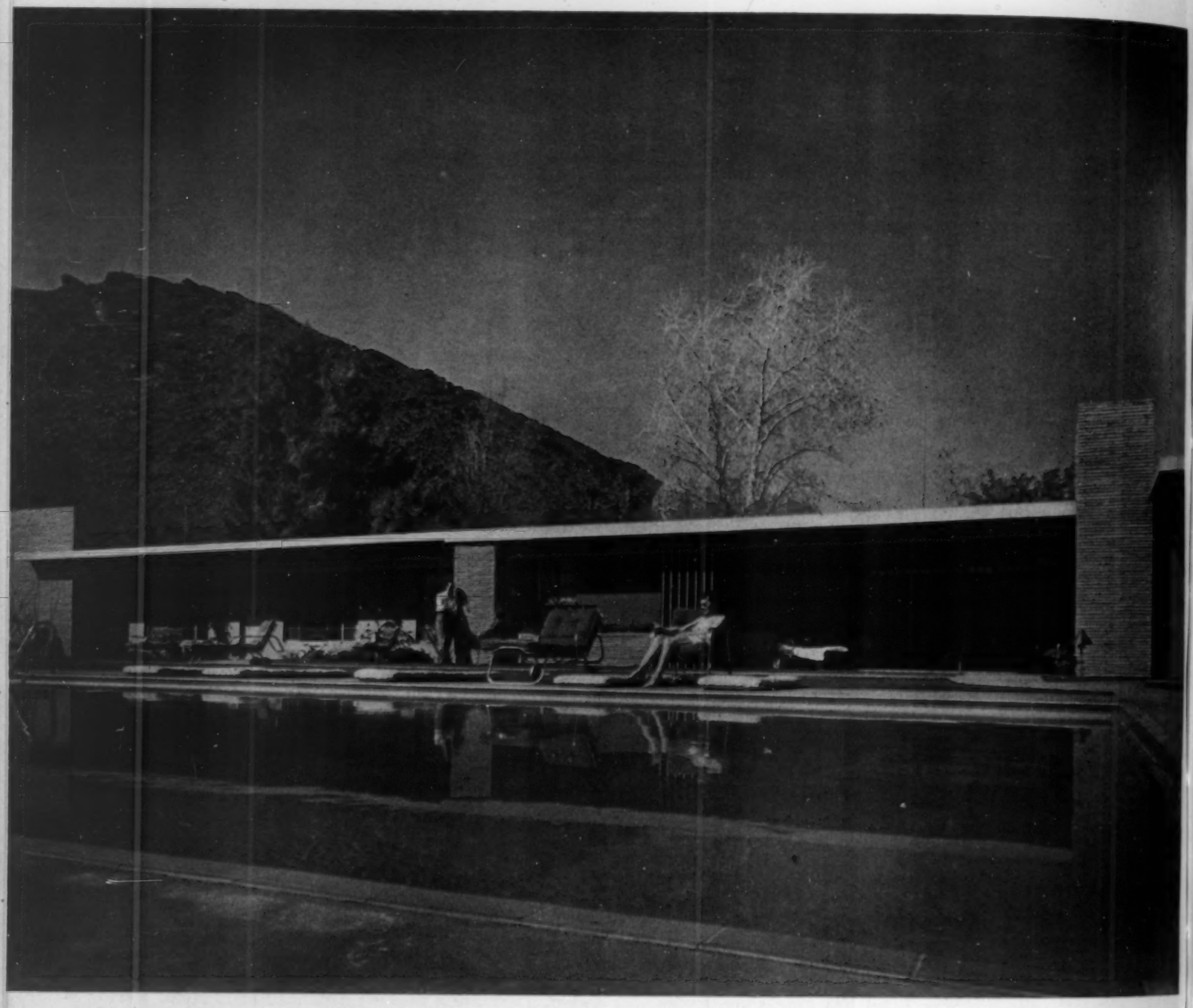
To the architect, the significant thing in this cycle is that now the motels are entering his own purview. An article in a recent issue of *Tourist Court Journal* was entitled, "They Could Always be Used as Chicken Houses." From the days when the pioneer cabin builder fell back on this safety factor, the motel has left behind its era of back-yard design. It has also passed through its period of garish imitation and amateurish staginess. It now has its own stature, and is asserting it in a new architectural consciousness.

It is significant, too, that being a new industry the motel interests are far from hide-bound in matters of design. They are a modern American institution, alert to and sympathetic with contemporary manners.

As a new concept of vacation living, the motel runs to bright, gay informality, rather than the dull plush of the old front-porch hotels. Convenience is still the rule of the road, a rule being interpreted in ever-higher standards of services and appointments.

The gayety in such an architectural assignment, however, must be tempered with a thorough recognition of commercial matters of planning. The S.R.O. signs will not last forever. Neither will the motels likely settle into standard patterns, for the variations in type, extent of services, price and location will make each a highly individual problem, to tax the ingenuity of the architect not only in design but also in the handling of rather complicated economics.

CALIFORNIA HIDE-AWAY, MOTEL STYLE



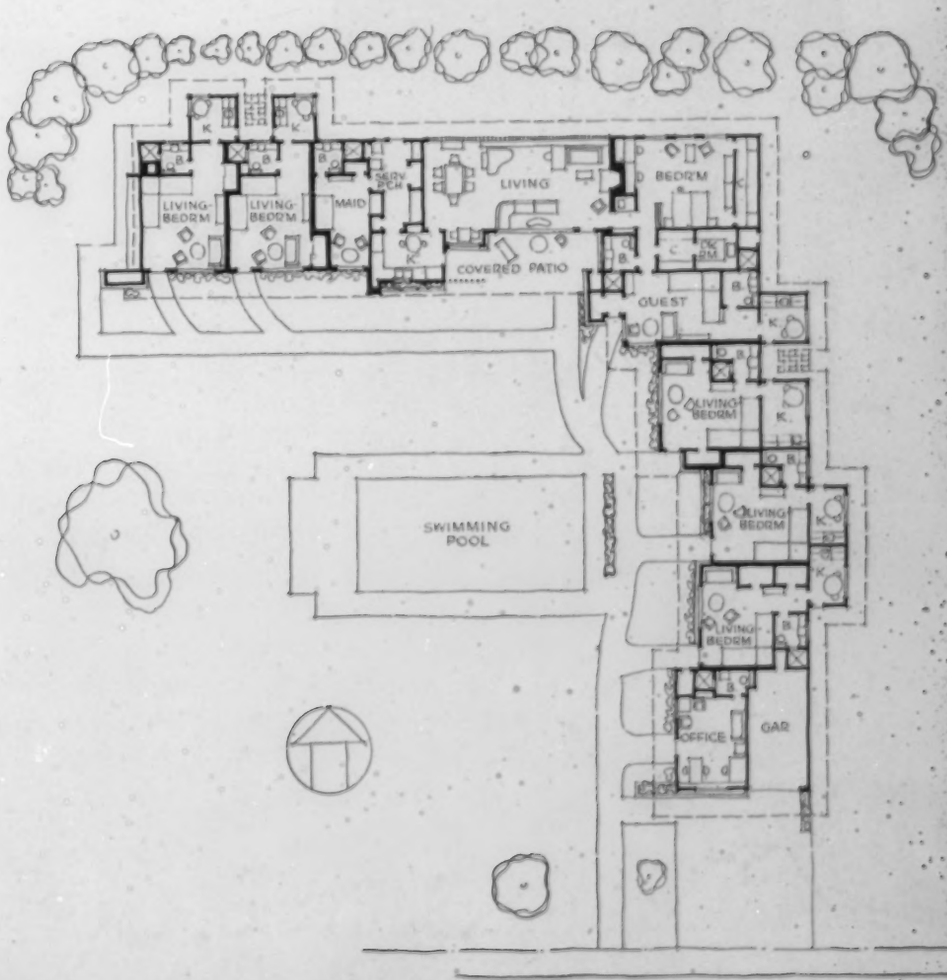
Julius Shulman Photos

Town and Desert Apartments, Palm Springs, Calif.

H. W. Burns, Owner and Designer

IF the "motel" is the modern version of a hotel, this one is a similar model of an apartment hotel for a vacation spot. Its rooms are really small apartments, designed for Californians who can afford to get-away-from-it-all in elegant seclusion at Palm Springs. While the convenience and informality notes are clear, this is far removed from the roadside sleeping concept of the more typical motor courts. Its design contemplates a commune-with-nature type of holiday where a swim and a sun bath are the doctor's prescription.

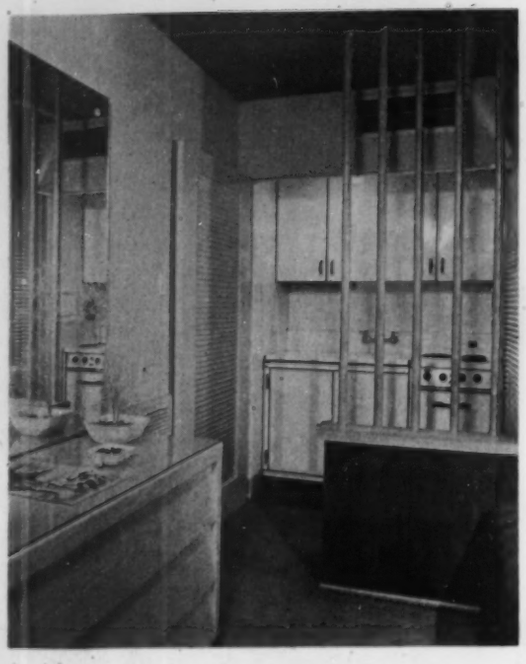
Julius Shulman Photos

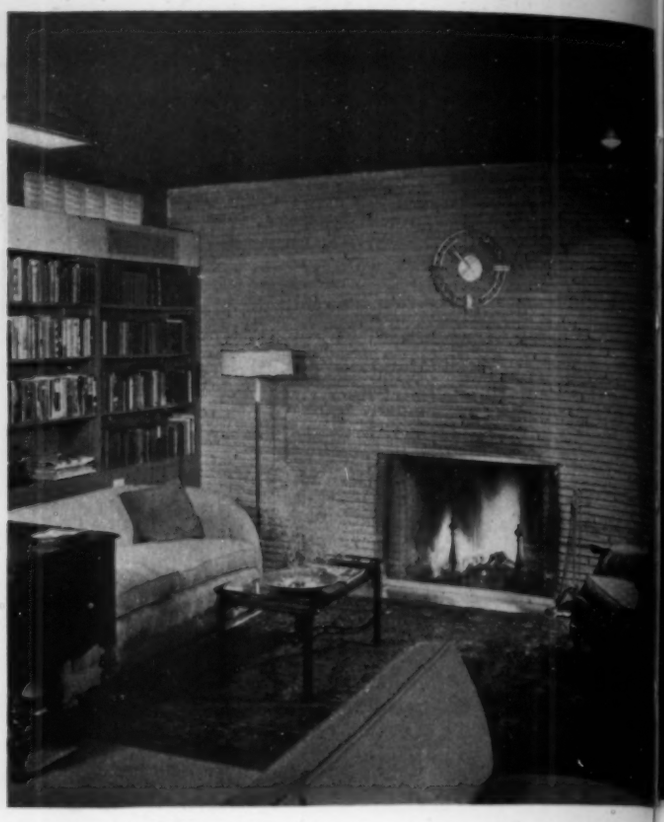


A little study of this plan is almost bound to impress one with the idea that here indeed is a new way of life, at least for those times when one craves a real rest. One gets interested, too, in the owner's way of life in this new concept of a building venture

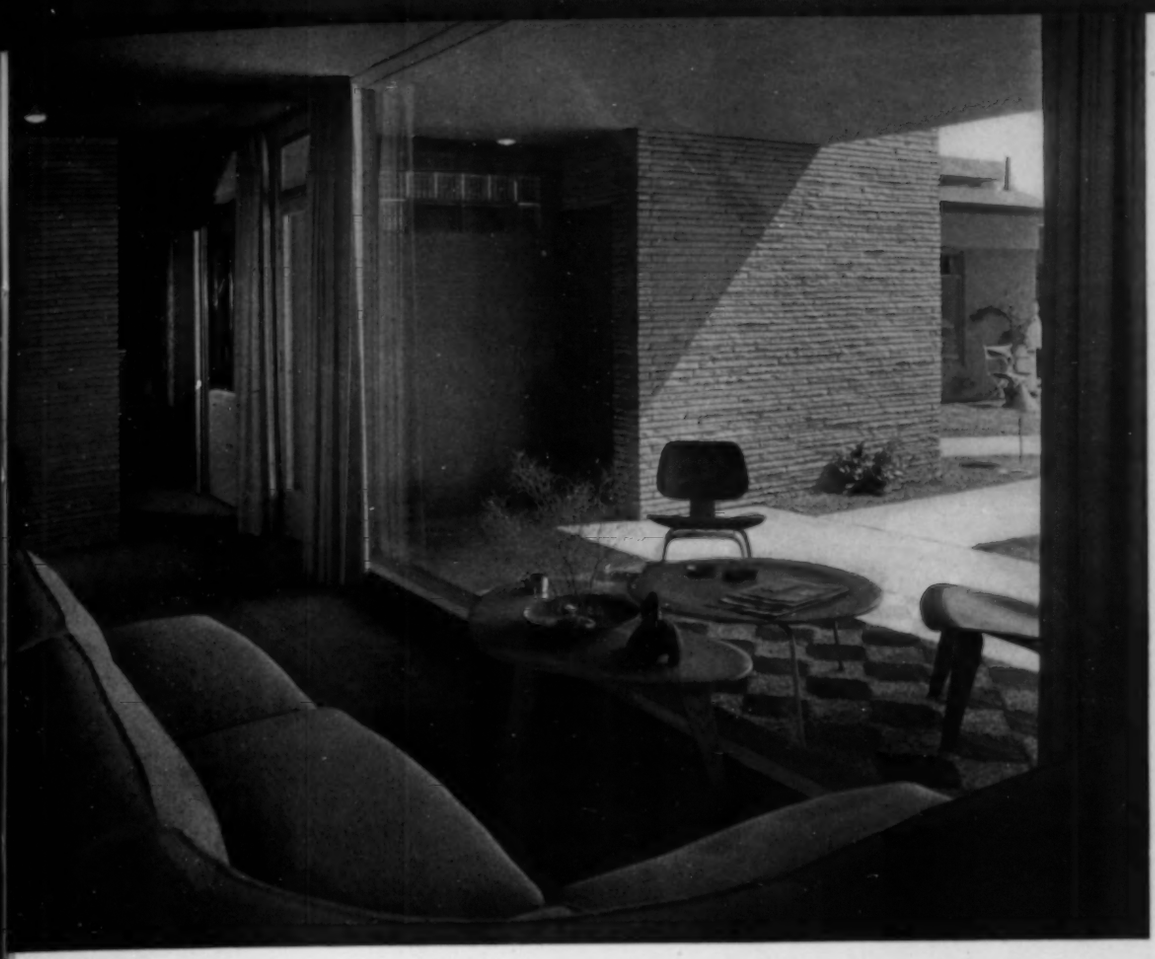
Each unit has a small Pullman-type kitchen, lightly screened off when in use, completely hidden by louvered doors at other hours. Note air conditioning duct

Julius Shulman Photos



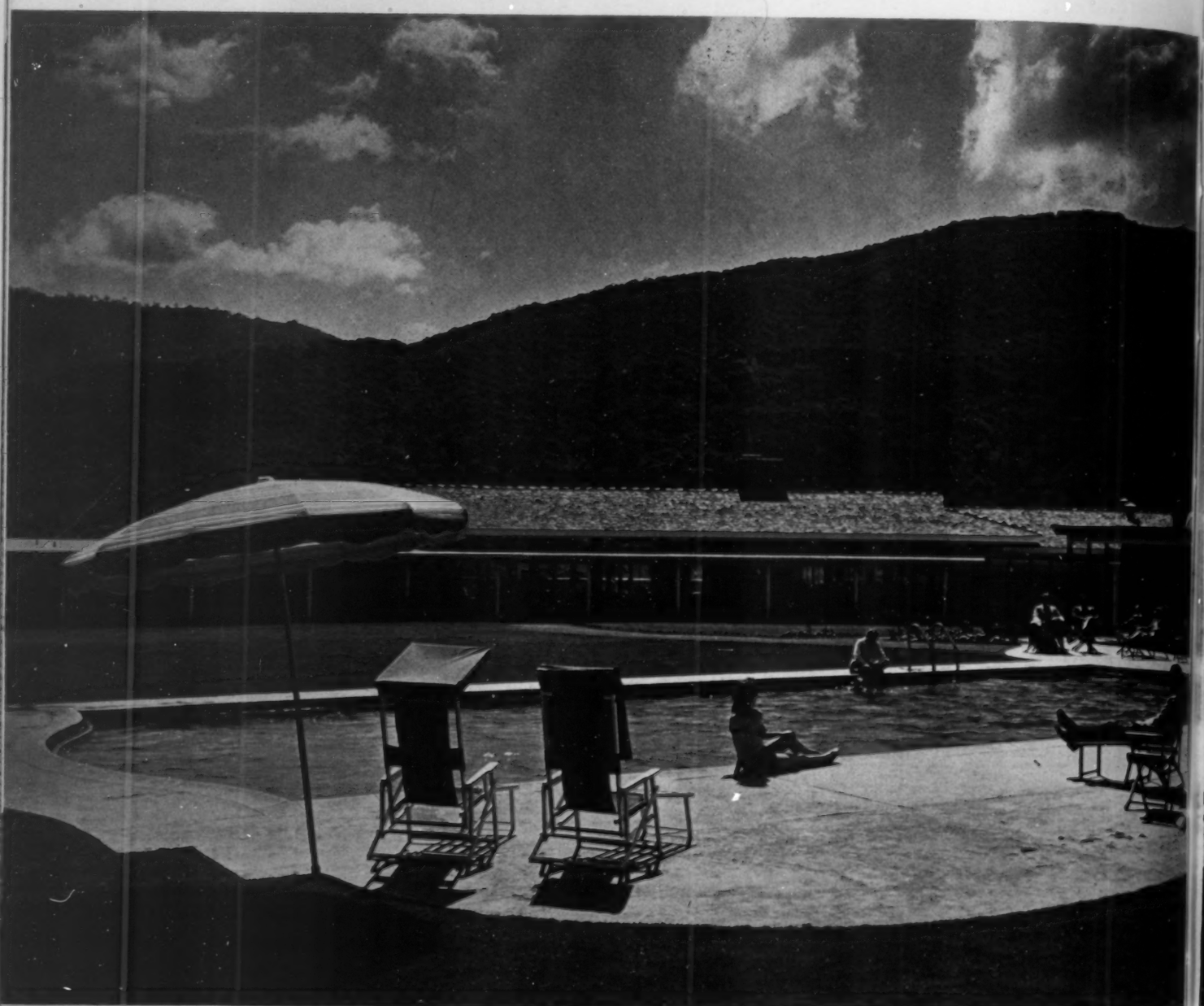


The broader view of the typical rental unit, below, shows day-beds in a hotel-type placement in the combination living-bedroom fashion, complete even to the built-in radio in the corner



Outdoor and indoor space merge so completely that in these photographs it is difficult to find the line of enclosure. Views through the glass wall are from the owner's living room toward covered patio. Note same brick inside and out

VACATION HOTEL IN THE MOTEL MANNER

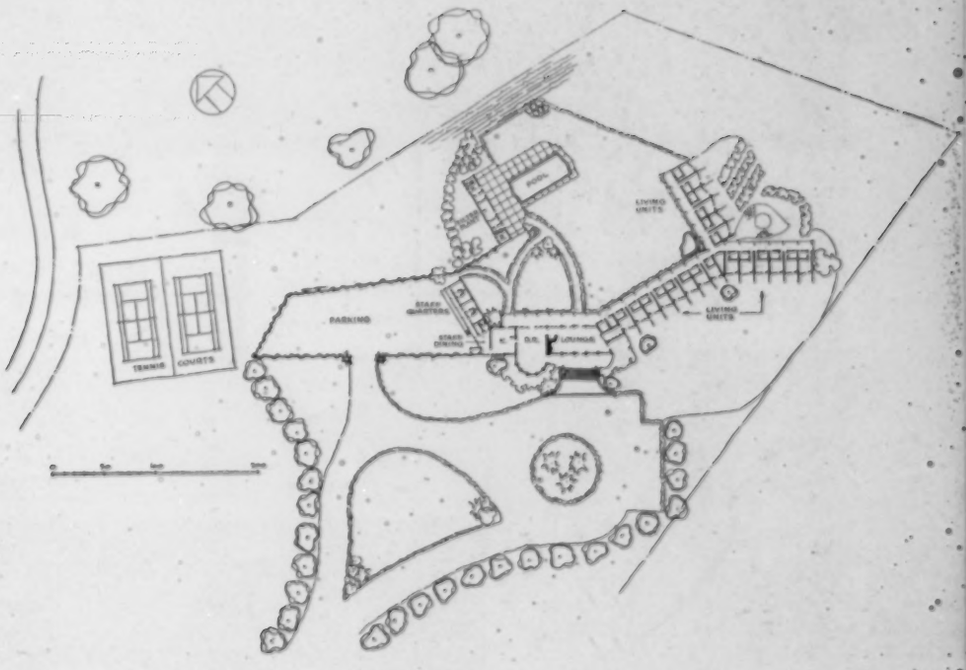


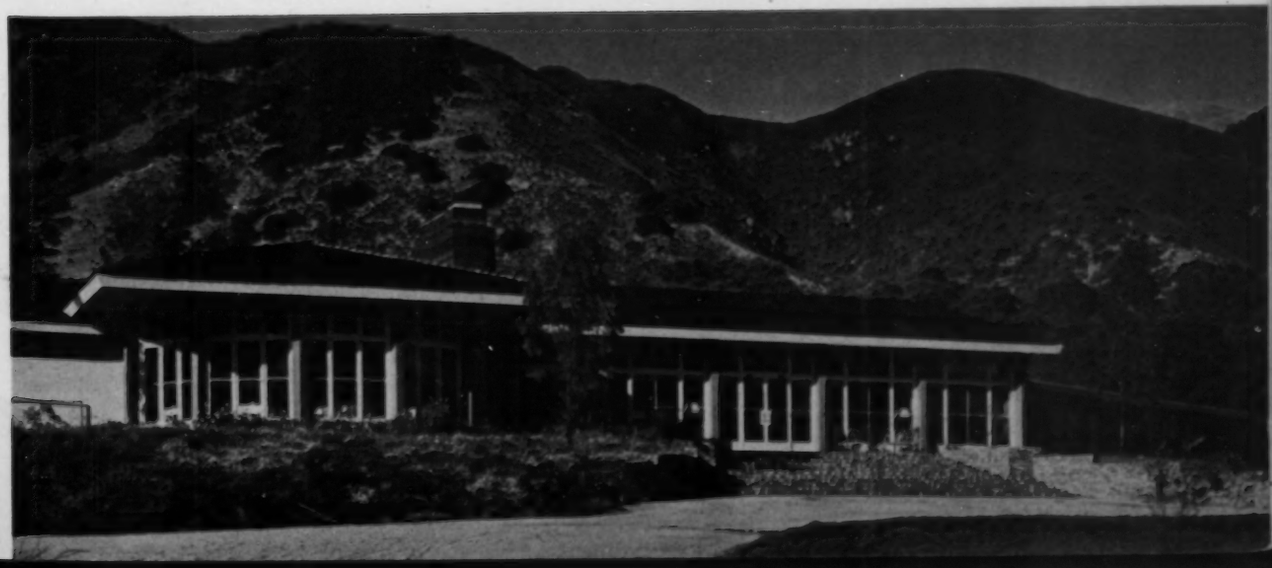
Morley Baer Photos

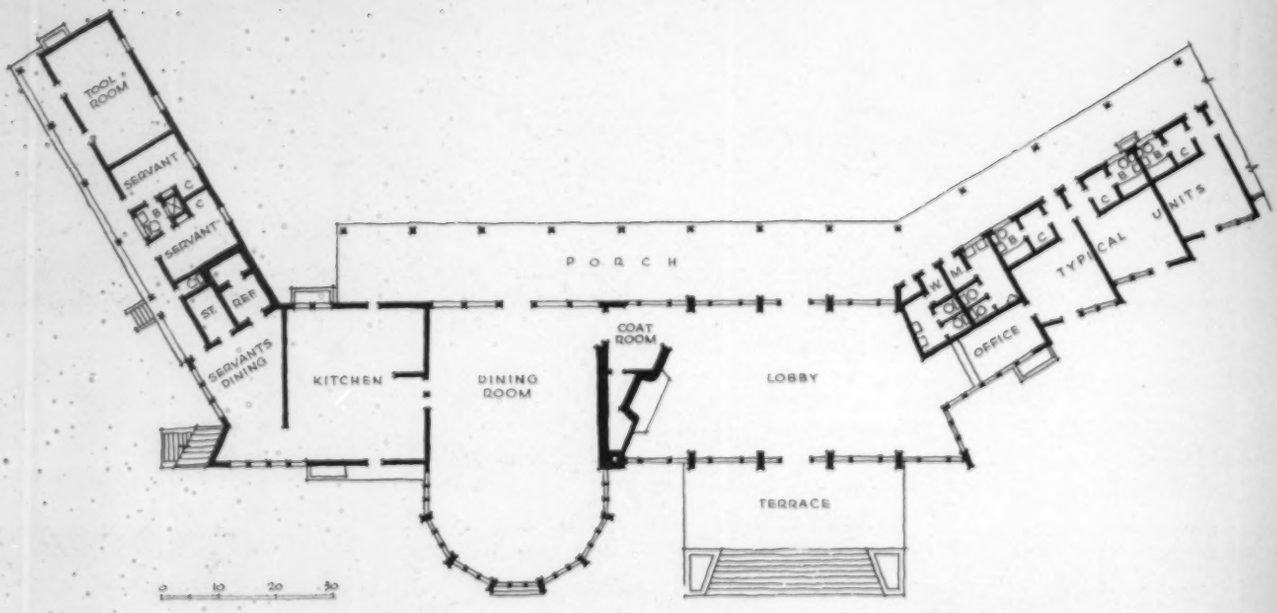
Carmel Valley Inn, Monterey County, California

Robert R. Jones, Architect

A COMPELLING example of the "motel" grown to the stature of a resort institution, this one has the spread that typifies California relaxation. It was this "spread" that dictated the low, dispersed arrangement, done in the ranch tradition. The angling wings give each unit a little patio, and also leave the possibility of extending wings in the future. The views, both natural and man-made, provided another design theme, which was carried out with a maximum of glass to bring the outside inward on every possible location. This was one factor in the use of covered porches rather than interior halls; glazing can always be put between the porch posts if it seems desirable, without blocking off views of the mountains or of the swimming pool and gardens.


TENNIS COURTS
PARKING
STAFF QUARTERS
STAFF DINING
LIVING UNITS
LIVING UNITS





Morley Baer Photos

Lobby and dining room facilities, with the kitchen area, were made oversize to allow for a future expansion to 40 or 60 rooms. The public area, with its lounge porch, was placed for views both front and rear. Service wing was turned to provide a windscreen

The architect mentions that cost considerations dictated many changes, including elimination of a massive chalkrock fireplace and furnace flue form, in favor of redwood covered brick flues. Perhaps the result in the photograph above is not properly in the ranch tradition, but it is doubtful if the guests would be moved to anything but hearty approval

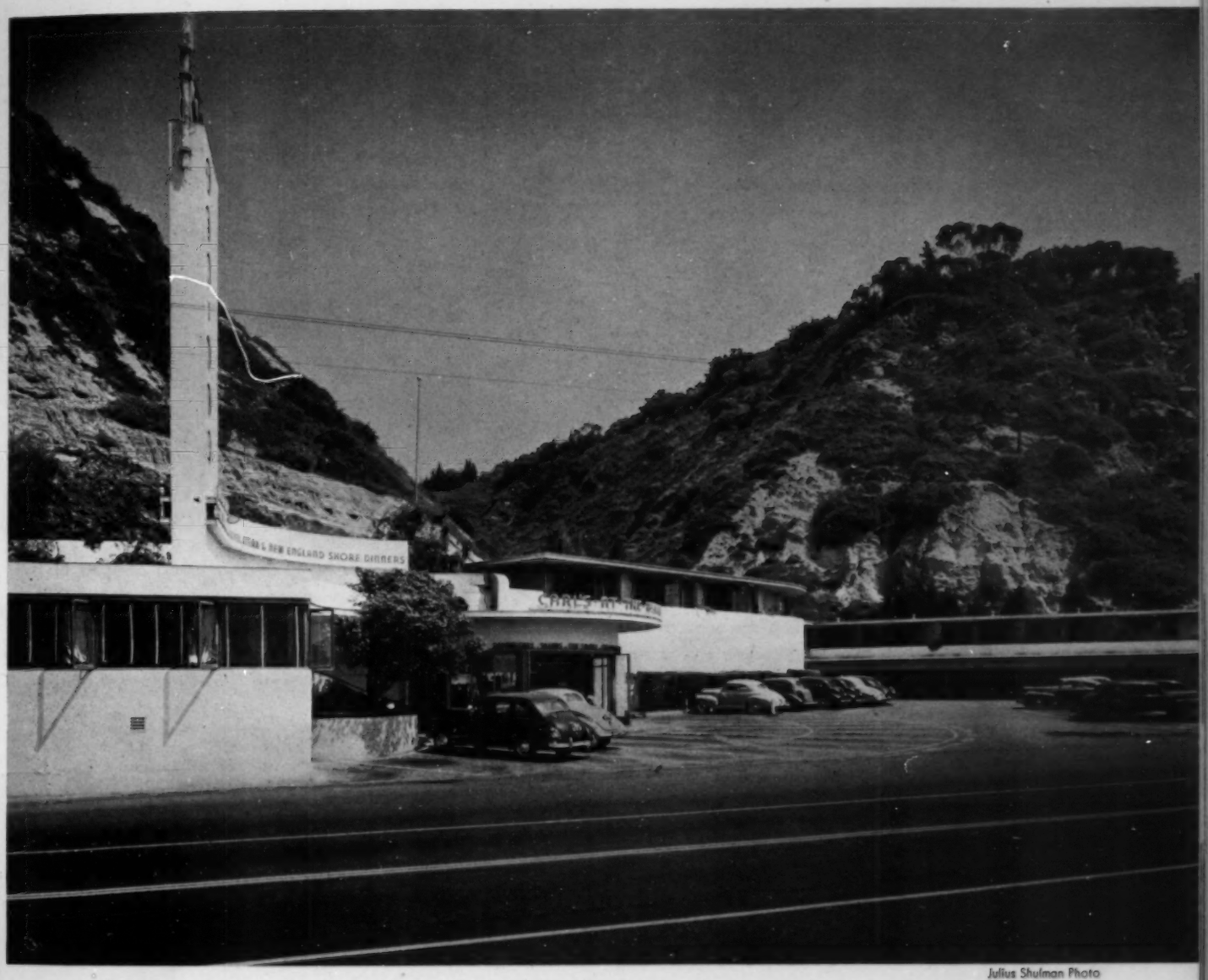
An eye more knowing than that of the average guest might notice that the rooms follow an idea successfully used in modern hotels — wide, shallow rooms, daybeds, scaled down furniture for an atmosphere of spaciousness

While the distant views are fully up to the California standard, the foreground is not forgotten. Nevertheless, eye-catchers are low enough for distant vision

Morley Baer Photos

No scaling down of furniture is seen in this view, though it is still there. Glass walls on the porch side inescapably draw the eye of anybody in the room until the porch area is effectively added to that of the room

A MULTI-SERVICE MOTEL AT SANTA MONICA



Julius Shulman Photo

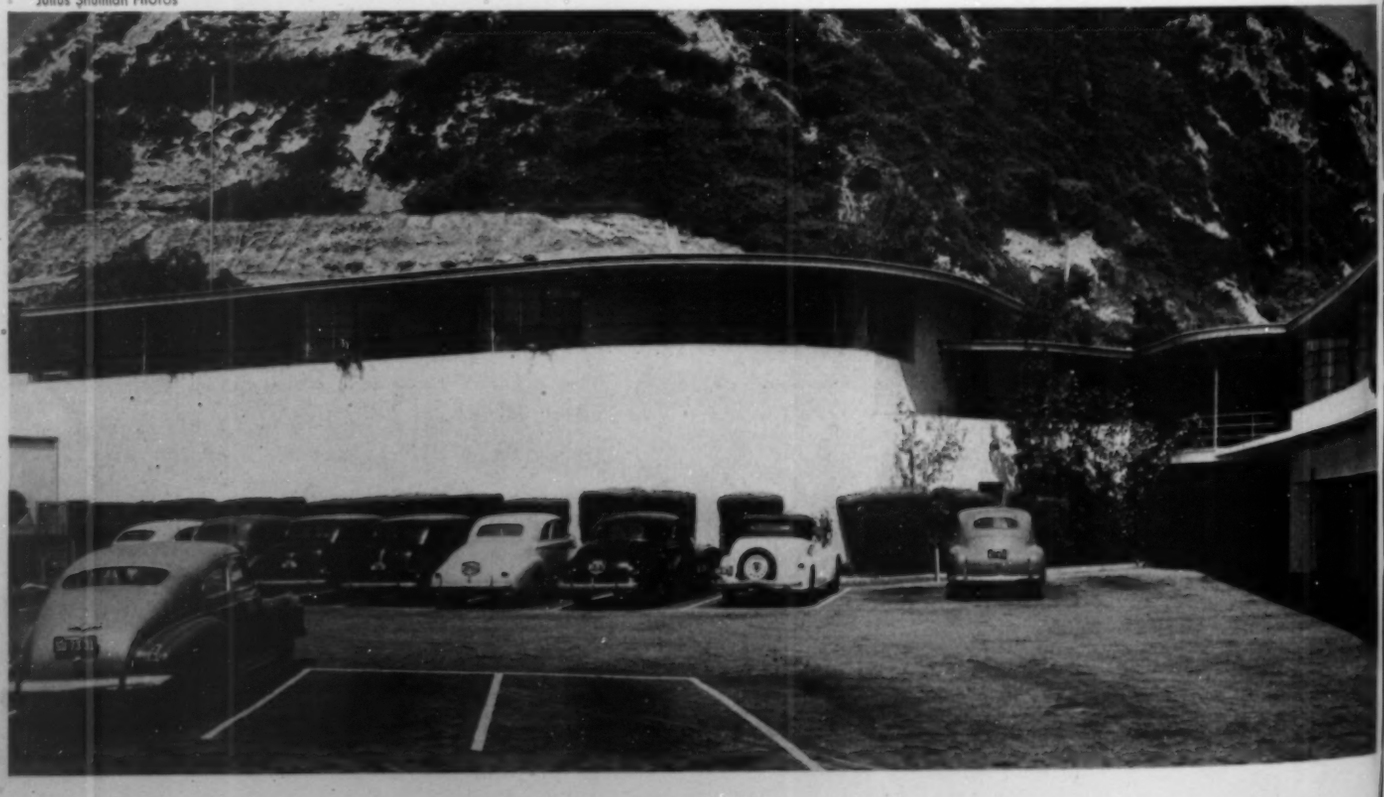
Carl's Sea Air, Roosevelt Highway, Santa Monica, Calif.

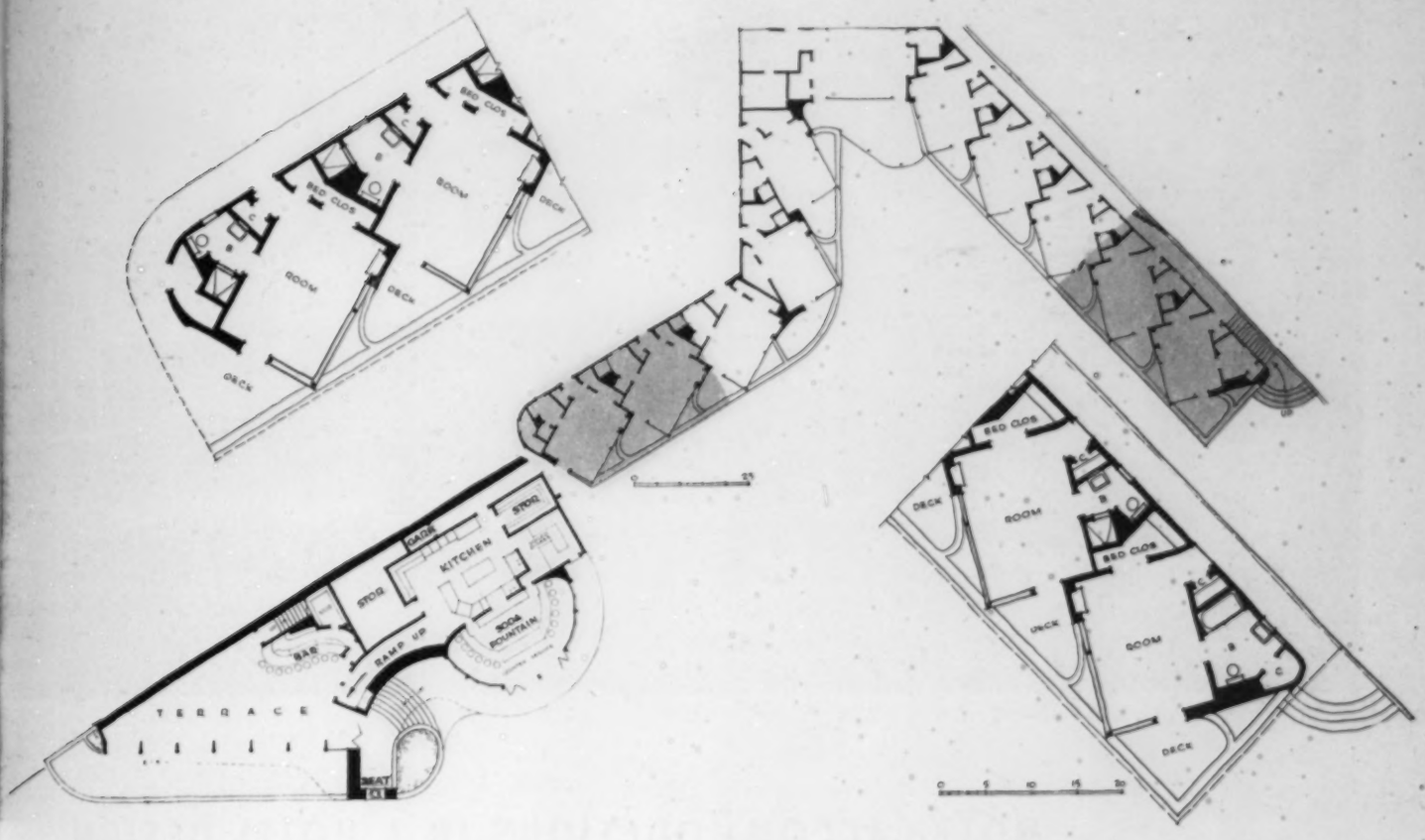
Burton A. Schutt, Architect

ACCUSTOMED as this architect is to handling problems of income production, he was confronted with an unusual list of them here, for this motel extends a wide variety of highway services to motorists along the bustling Roosevelt Highway, paralleling the Pacific. There is auto service, food service to cars, table service in a dining room, cocktail bar and rooms of the motel type. The site, on the far side of the road from the beach, introduced its own difficulties. The result is an elevated building, to keep highway traffic from obstructing the view, with rooms angled on the plan so that each faces the sea. The dispositions follow in general the natural lines of the palisades behind, with public areas close to the road, sleeping rooms recessed in a deep V.

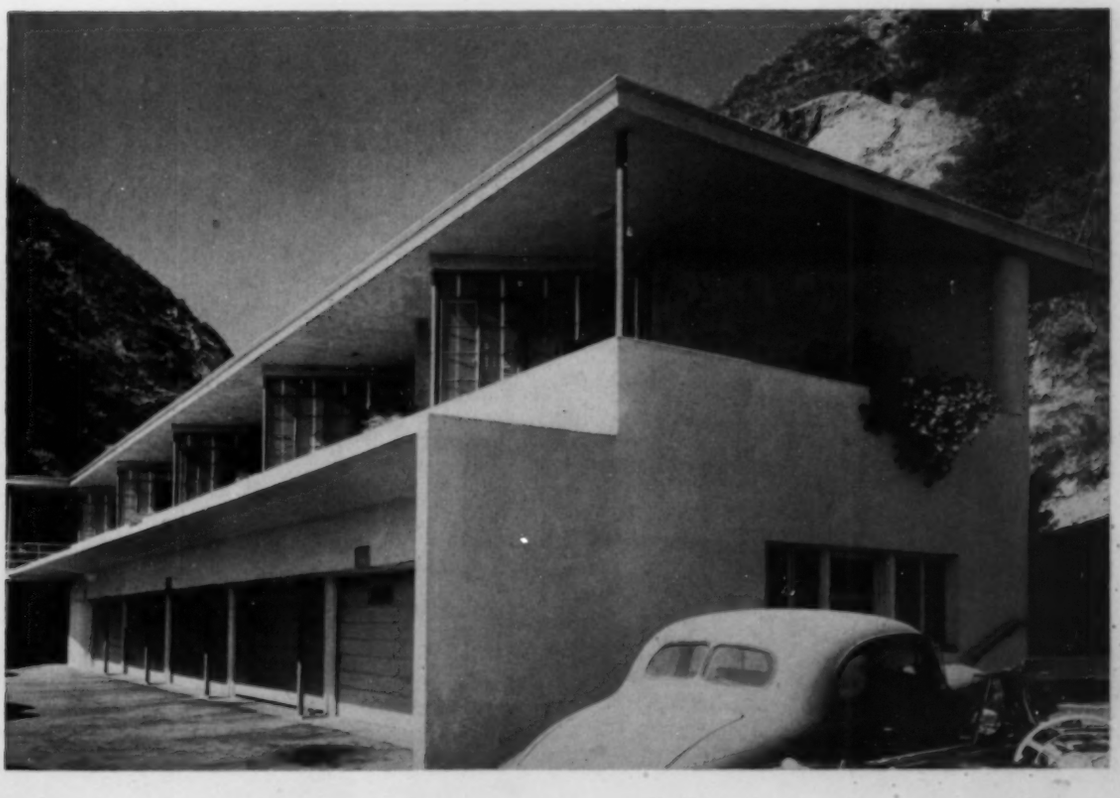
Bedrooms are elevated to get a view of the sea across the highway, and are staggered to face that view. Triangular spaces left are utilized in the rear for closets and baths, on the front for little private balconies. The architect calls particular attention to the arrangement of corner windows, in a manner designed to trap all breezes as desired. Rear balcony gives access to sleeping rooms

Julius Shulman Photos





Space below raised sleeping floor is utilized for garage. Garage is of concrete construction, for fire protection, construction above is frame and stucco. In the plan above, note different levels of soda fountain, kitchen and terrace, the last elevated for view. Stairs at back of bar lead to lounge rooms and storage spaces on the second floor

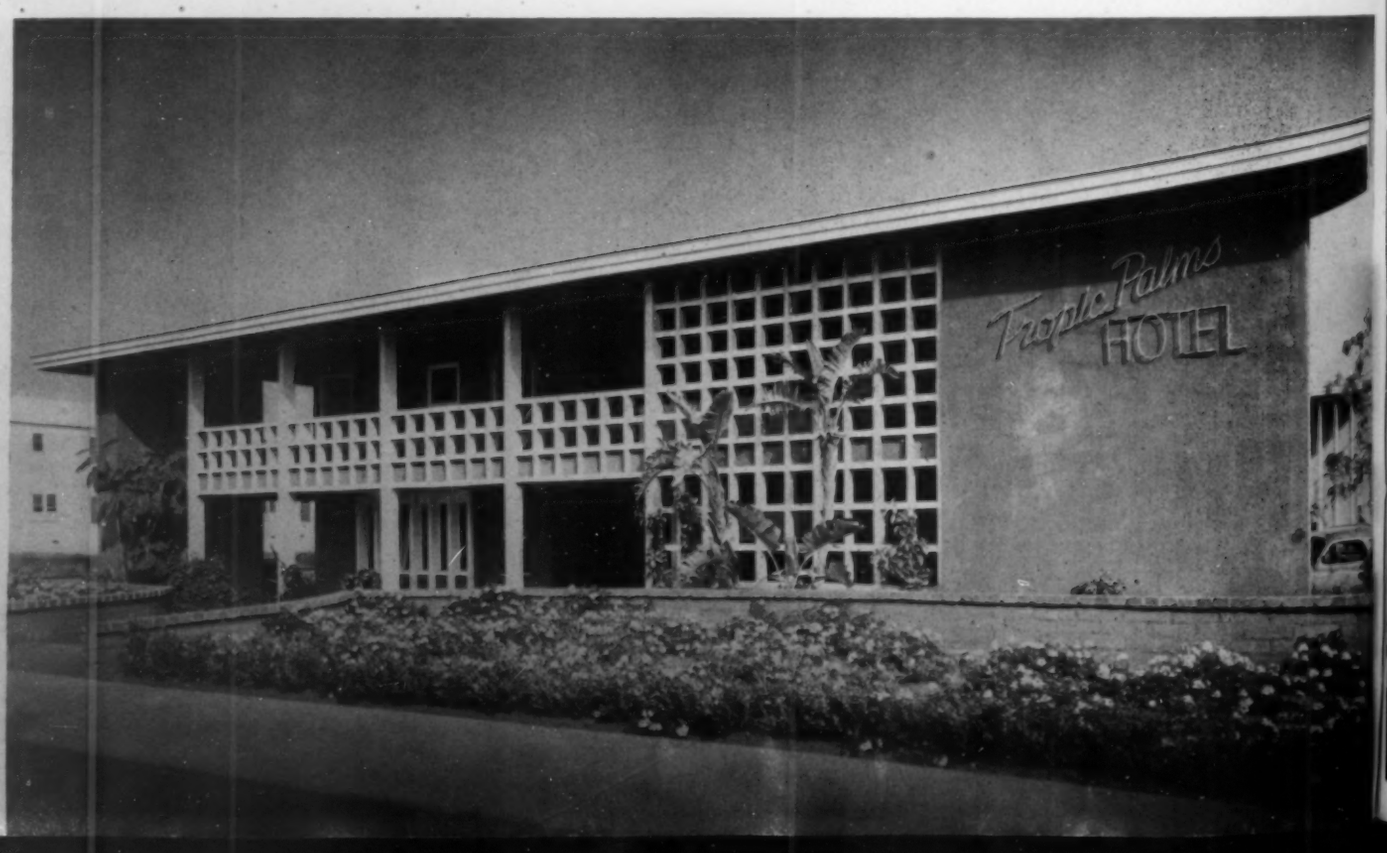


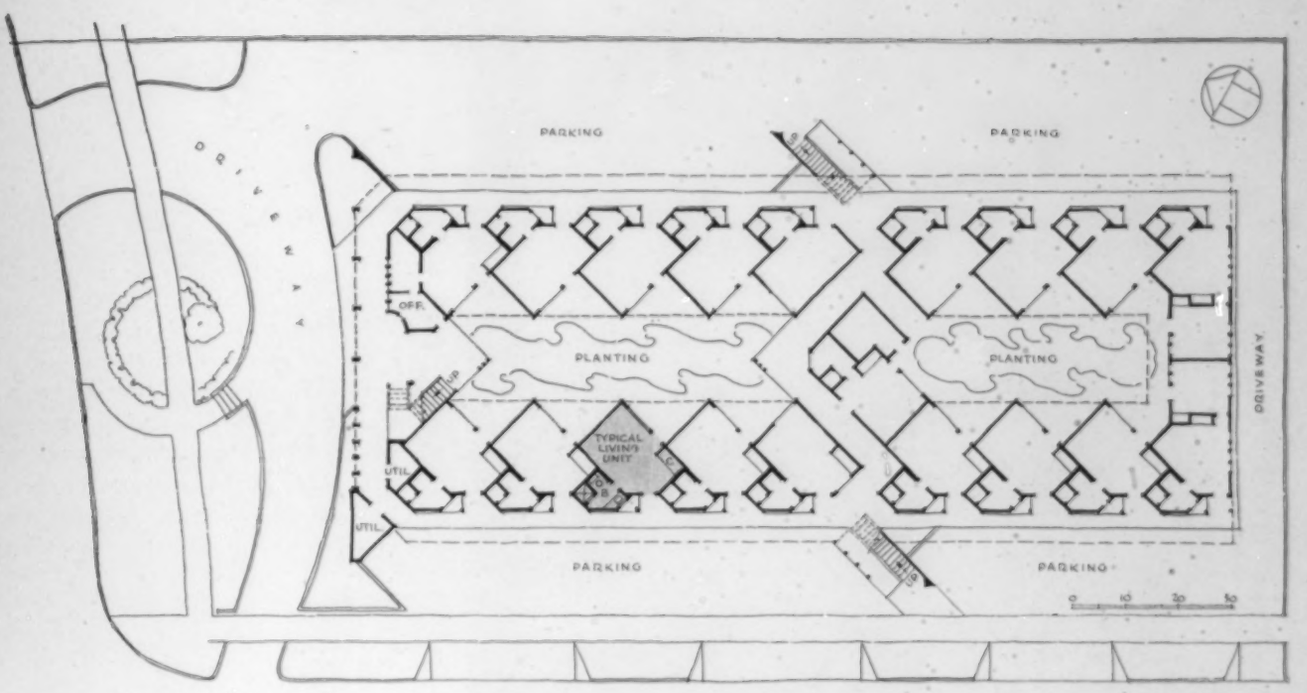
MOTEL ACCOMMODATIONS IN A HOTEL DESIGN

Tropic Palms Hotel, Wilshire Boulevard, West Los Angeles

Burton A. Schutt, Architect

Julius Shulman Photos



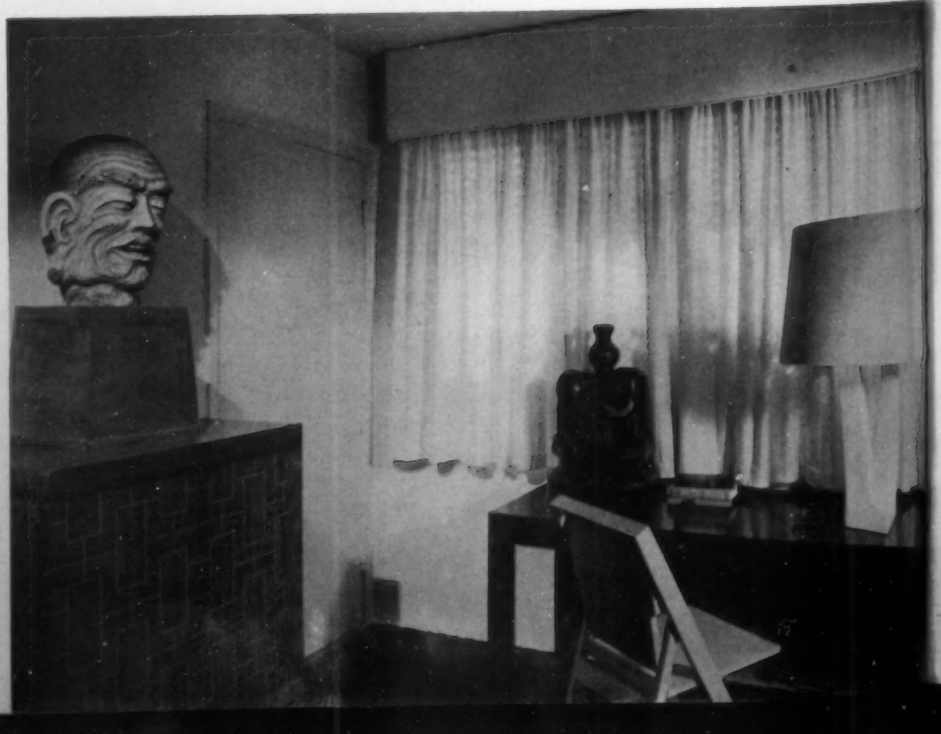


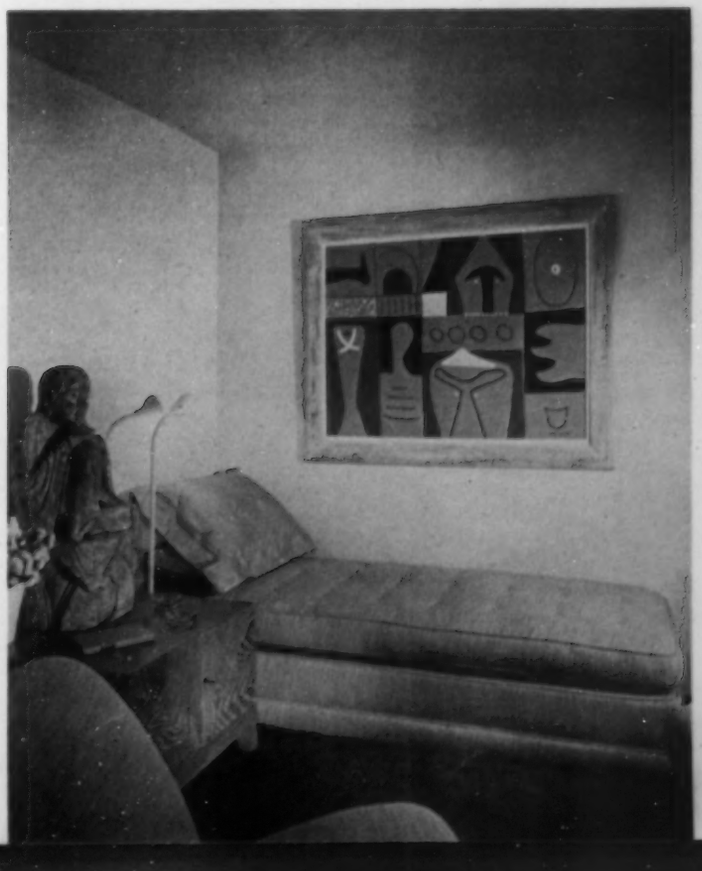
WHILE a motel seems to imply a large open site, this one had to be accommodated on a lot 100 by 200 ft. Thus it comprises motel-type units put together in a hotel design. And the architect was primarily occupied with income matters, not with any *tour de force* in architectural design. In this latter respect he was further handicapped by materials shortages, as this hotel was built before the close of the war. In any case, Tropic Palms, designed to offer middle-class accommodations on busy Wilshire Boulevard, has been exceedingly popular, and has enjoyed the income of a luxury hotel. Setting the rooms into the plan at a 45° angle brought light and privacy that would not otherwise be possible. Entrances from the outside balconies have proved to be quite satisfactory, particularly as to maintenance. Eventually plantings will give a hanging garden effect.

Parking spaces encircling the building, combined with outside entrances opening directly to the parking areas, have preserved the convenience and informality of motel accommodations

While the angling of individual units may have narrowed the interior court, it gives each apartment a great deal more privacy than would be possible with any other placing, and each gets a private balcony. The design contemplates plantings on the balconies, to soften the straight lines in a hanging garden effect

Julius Shulman Photos



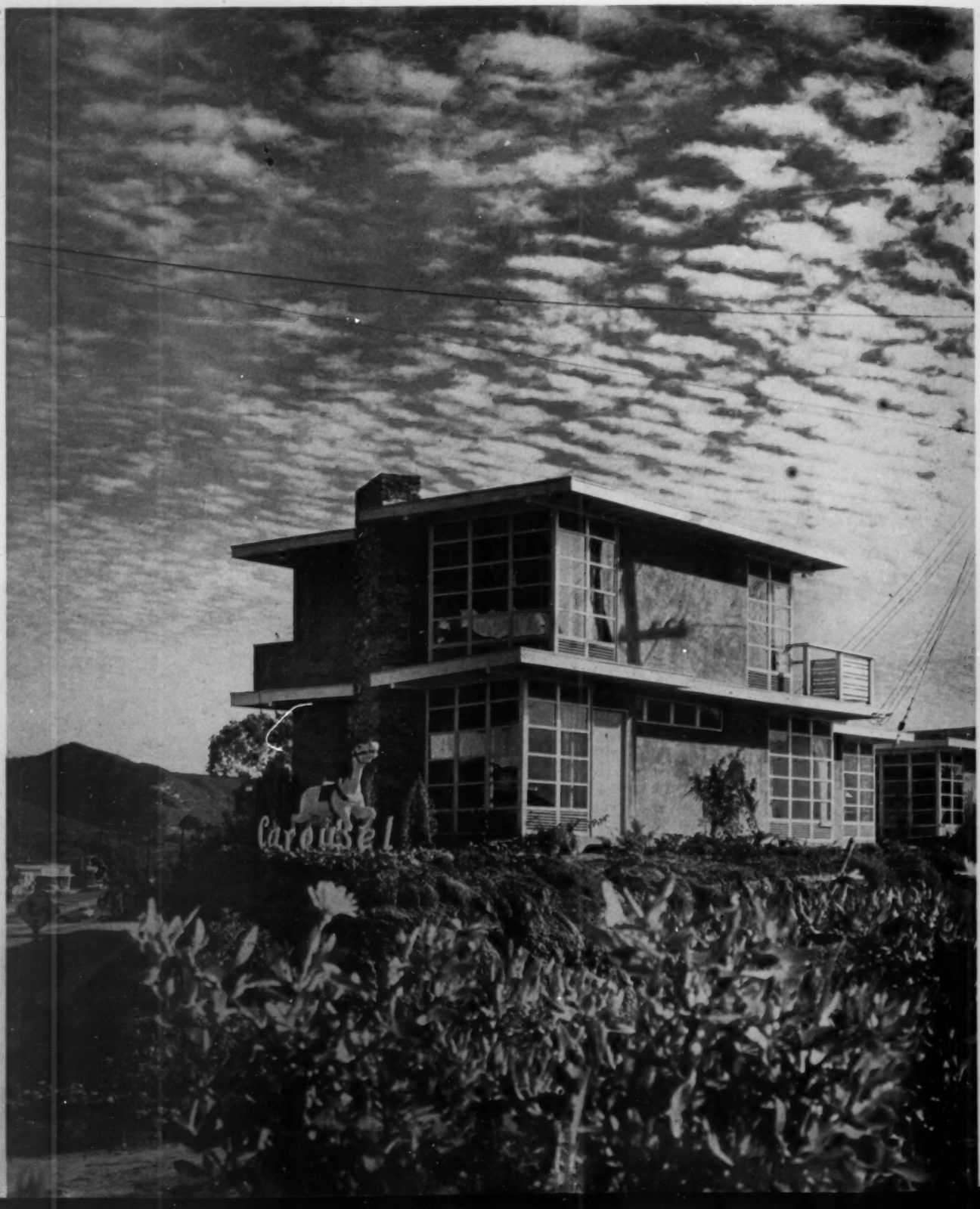


Interiors are simply designed and simply furnished, but a bold use of art forms in sculptures, paintings and furnishings lifts the rooms beyond the impersonality and monotony so commonly associated with hotel rooms

Carousel

MOTEL DESIGNED NOT TO L

Julius Shulman Photos

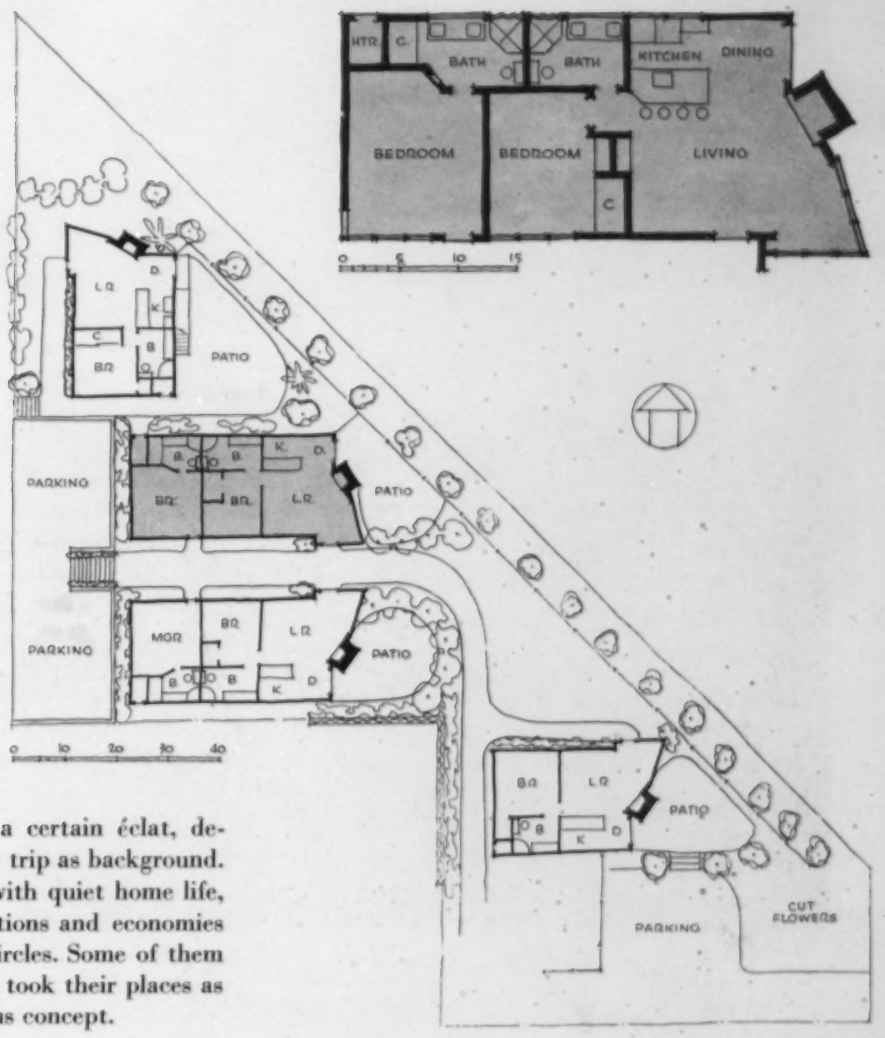


LOOK LIKE HOME

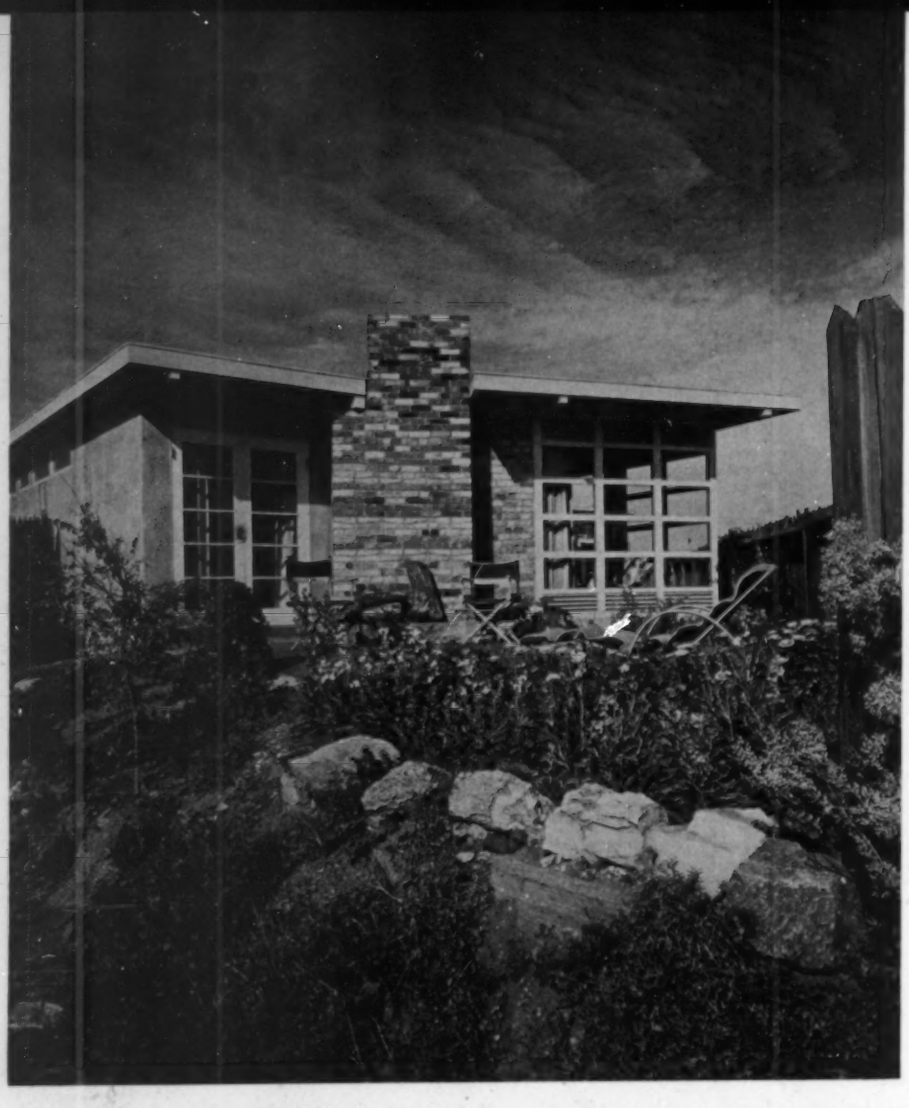
Richard Massen

and Roland Greene

Owners and Designers

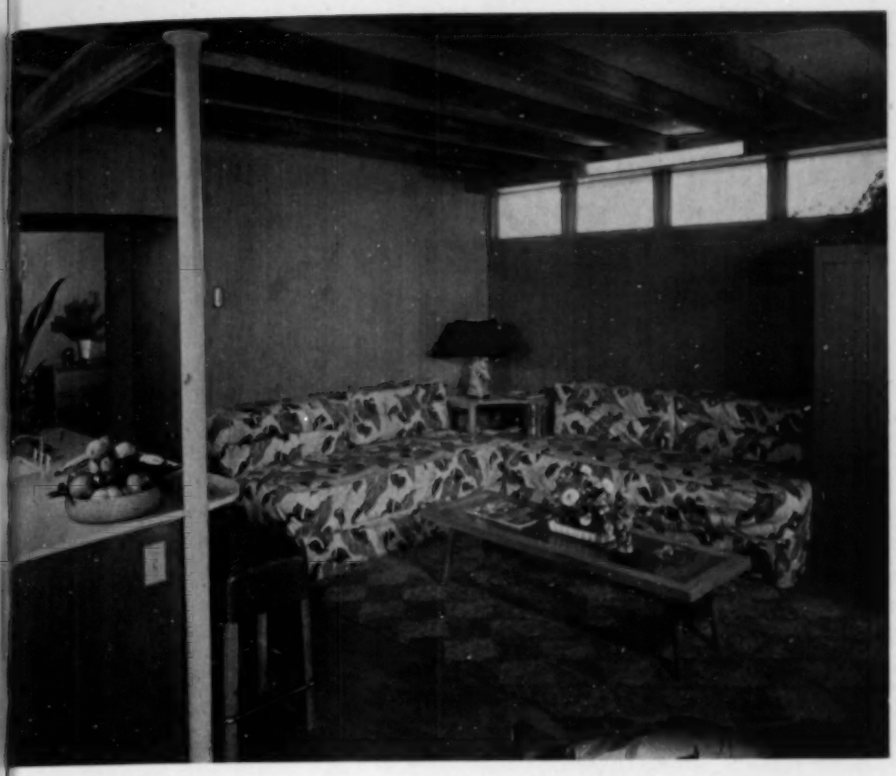


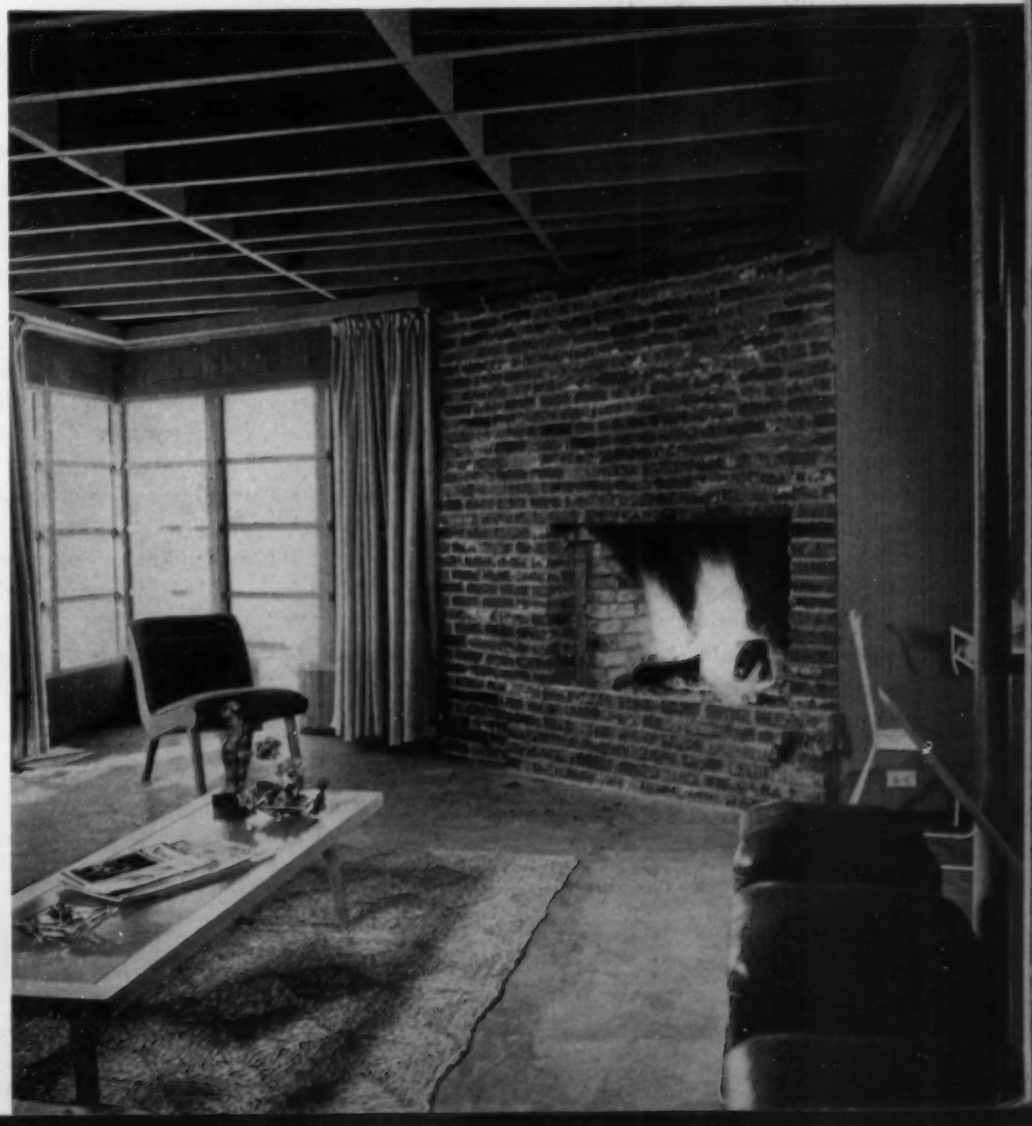
Two G.I.'s, tackling civilian life with a certain éclat, designed their own motel, with a study trip as background. Their theme was a zip *not* associated with quiet home life, which shows in extemporaneous innovations and economies thoroughly acceptable in architectural circles. Some of them which started as shortage substitutions took their places as perfectly logical items in the adventurous concept.



Cottage type units were economically built. For example, fixed window sash were designed for a standard glass size bought in case lots. Windows are fixed since no opening hardware was available at time of construction (top and bottom louvers give ventilation)

Julius Shulman Photos





Simple materials boldly used carry out the designers' theme of not-like-home *innovations, as for example the Lally column, the plain fireplace wall, fluorescent light fixtures used as drapery hangers, the simple if rather oddly assorted furnishings. The economy tenet of design did not, however, prevent such comfort items as radiant heated floors, and infrared heat lamps in bathrooms. Colors are also on the thematic note — gay yellow and cerise accents on gray*

PLANNING FOR FAMILY LIVING

BY FREDERICK GUTHEIM

SMALL house designers will generally agree that the most time-consuming, costly, and uncertain part of their job is determining family needs, preferences, and capabilities. A proper analysis that will allow a reasonable statement of the problem is usually far more difficult than the solution of the small house problem, once it is defined. To short-cut lengthy conferences with clients, architects have resorted to various stratagems. Some have developed questionnaires, often formal, written documents to be filled in by the client. Some have their own check lists. Others rely principally on observation of the client in his home, and his answers and reactions to questions discussed in conference. Although all have their purpose when properly employed, none of these measures are wholly satisfactory, and the designer is in fact never sure until the house is completed and occupied that all relevant points have been covered and satisfactory solutions devised.

A major part of this difficulty, of course, lies in the inability of the client to state his problem concisely and in suitable architectural terms. It's like the old argument that the veterinarian has to be smarter than the doctor because animals can't tell you what's the matter with them. The client has no difficulty in stating his problems in architectural terms, if by that expression we admit the well-known client with a portfolio of clippings, photographs of details, and bulging notebooks. But this cannot be regarded as a suitable statement of the problem, especially if the client's pocketbook does not bulge in proportion to his portfolio of "ideas." This statement of the problem, for better or for worse, usually must be made by the architect in the light of his superior knowledge of family needs and the way they must be formulated to find architectural expression. A suspicious uniformity in the design of houses argues that the final decision is usually the architect's. Then it is a question of selling it to the client.

One inevitable difficulty results from this practice — changes in design. Enough changes are already required by the architect in working out his own solution, by construction demands, and because of cost factors. Any possibility of minimizing changes by eliminating those caused by indecision or vagueness on the part of the client, or insufficient knowledge of needs that only become apparent when final drawings are understood, should be welcome. And despite complaints from some architects that the client should be taught to read blueprints, the cause of the difficulty is more fundamental than that source of misunderstanding.

Most architects would prefer a fuller and freer collaboration with the small house client. They appreciate their own insufficiency in stating the client's problem, and they suspect he has particular requirements that would result in a more satisfactory house which the architect may never discover. But the wise architect shrinks from a too-close relation with this client, not because he does not wish to appear inquisitive, but because he knows that 12 per cent of a $15,000 house will not even cover the office costs involved should conferences become lengthy. Some day, perhaps, architects can support a schedule of hourly fees, like psychoanalysts, but hardly at the present time.

The architect also knows — and we might as well face it — that in return for his fee he can seldom give the client more space in the house. All he can give him is better space-usefulness through planning and better design. Why should we shrink from the fact that the architect-designed, custom-built house delivers less

Early Years
From 1 to 3

Crowded Years
From 2 to 15

Peak Years
From 12 to 27

Later Years
From 25 to 40

YEARS OF FAMILY LIFE (GENERALIZED)

space per dollar than factory-fabricated and site-fabricated houses now on the market, or the product of an efficient mass-housing speculator? Rather we may as well confess it at the outset in order to concentrate on the one thing the architect should be equipped to deliver — honest professional judgment, sound planning, intelligent design.

There should be no reason to underestimate the worth of these scarce and valuable commodities, for the lack of which most houses seldom stand well, look well, or work well. A bottle of patent medicine invariably costs less than a trip to the doctor (and even if the patent medicine is identical with the doctor's prescription, it usually costs less). The seconds the doctor spends scribbling his prescription are set off against the minutes and hours, often with highly skilled assistance, the doctor spends making his diagnosis. Not the article produced is the sole measure of architectural service rendered, but the careful relation of the client's individual problem to the variety of solutions that the commercial market, no less than the imagination of the architect, offers.

The thought may be sobering that even short of the full development of prefabrication, the steady increase in the use of larger components — the utility core is but one instance of this process — tends to emphasize the architect's abilities in matching individual family needs and ready-made solutions. Obviously the prefabricator cuts into the market of the speculator rather than the small house architect's market. But short of this, the tendency to assemble virtually the entire house out of Sweet's diminishes the architect's role in designing details while at the same time it increases his importance as a planner. One may further reflect that every increase in standardization of the house itself, particularly at the low level at which prefabricators are now designing, creates additional clients who will be willing to pay more for a custom-designed product — even if they cannot pay enough for one wholly custom built.

Some progress can be made, in at least two directions, that may relieve the situation small house architects now commonly face. The client's thinking can be shaped, his preferences and choices more fully developed, his standards made known, if the architect can guide the client in the steps preparatory to design. The household magazines that are the common fare of most clients and their wives are ordinarily of small value for this purpose. There are, however, some excellent books that clients may read with profit, and there are, of course, the architectural magazines that the more sophisticated clients have discovered for themselves.

Under the rubric "What to do before the architect comes," I would classify such books as Harold and Martha Sleeper's YOU AND YOUR HOUSE, Mrs. Dorothy Field's THE HUMAN HOUSE, and my own report of the Conference on Housing for Family Living. In common these books try to guide the client in thinking directly about livability problems. Often they attempt to explain construction problems, but they usually stay away from formal design recommendations and pat solutions. Reading them will not give you an inhibited client, or one stuffed with plans, but it should give you a client better informed and better prepared for his role as your working partner in small house design. All three books, it might be added, stress the ability of the architect to understand and help solve livability problems. Although in some cases this faith may be misplaced, it seems a reasonable contention that given a chance the architects can do the job.

Far more important than books, as a way of abbreviating the time wasted in preliminary conferences and getting more directly at the heart of the problem, however, is a closer study by the architect of some of the more recent literature on livability. Since the much joked about effort by the Pierce Foundation to determine minimum spaces required by representative individual and family activities, livability studies have

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Frederick Gutheim, special writer for the New York Herald Tribune, *wrote* Houses for Family Living, *a report on the Rye Conference on Housing for Family Living, published by the Woman's Foundation, 10 E. 40th Street, New York, analyzing for prospective home owners the progressive stages of family life and the problems of providing flexible houses to meet changing conditions. Two of Dong Kingman's illustrations from the pamphlet are used through the courtesy of the Woman's Foundation.*

gone both wider and deeper into the problem. They have not, as a rule, been "architecturalized," but that, after all, is not the job of the sociologist, the psychologist, the family relations expert, the home economist, or others who have been exploring and describing problems only architecture can ultimately solve.

The purpose of this article is not to produce a small house plan. It is to explore some of the ways we can take the pain out of small house designing. Perhaps an illustration will help. Take the living-dining-kitchen relationship that is the core of the small house plan. This can be resolved in five ways, thus:

Living Dining Kitchen: Separate rooms
Living Dining-Kitchen: Two rooms. Eat in Kitchen
Living-Dining Kitchen: Two rooms. Eat in Living Room
Living-Dining-Kitchen: One room
Living-Dining Dining-Kitchen: Two rooms. Eat in Kitchen and/or Living Room

There are without doubt individual families who strongly prefer one or the other of these five solutions. The architect's job is to fit the particular house to the individual family.

Begin with the generalities. By reading the polls of opinion gathered since the war by *Better Homes and Gardens*, *McCall's Magazine*, *Parent's Magazine*, the Public Housing Authority, and others, you will learn that almost *no* families want to eat in the living room. These are not low-income families but all servantless families — i.e., the small house family. Eating in the living room is too much work, too far from the meal preparation center, gets the living room dirty and messy, and besides people may drop in while the family is eating. This is what families say. You can also learn that if the dining center is visually separated from the living room, as in an L-shaped plan, and if it has direct access to the kitchen, much of this objection will be overcome.

The polls also tell you that almost no families like to eat in the kitchen, although many of them do in preference to making the long trek to an old-fashioned dining room, and they do overwhelmingly in preference to eating in the living room. To eat in some kitchens many large families will even eat in shifts! Considering most of the compact kitchens in small houses today, you can't blame them. There is also a subtle question of prestige, for many families have not accustomed themselves to the idea that meals in the kitchen are not a mark of social degradation. They'll do it, but don't want to be seen doing it. What families want is an eating center conveniently related to the kitchen but sufficiently separated from it to allow amenity and privacy. What they don't want is a breakfast bar, a dining nook, or the conventional alcove.

Now get behind what people say and look at realities. As the composition of the family changes, the eating routine changes perhaps more than any other household activity.

A young couple eat two or three meals a day in the house, and that's the end of it. There are only two of them, and the amount of food and the serving of it are negligible. They can eat in the kitchen, from trays in the living room, or in bed. It doesn't make much difference.

In the family with three pre-school children, viz. the same couple six years later, as many as eight or nine separate cooking and serving arrangements may have to be made. Different members of the family have different schedules to meet. The whole cooking and serving routine becomes very much more complex, and heavy penalties are paid in lost time when the homemaker has to work against handicaps of inconveniently laid-out kitchens, poorly related to dining areas, and in cramped spaces.

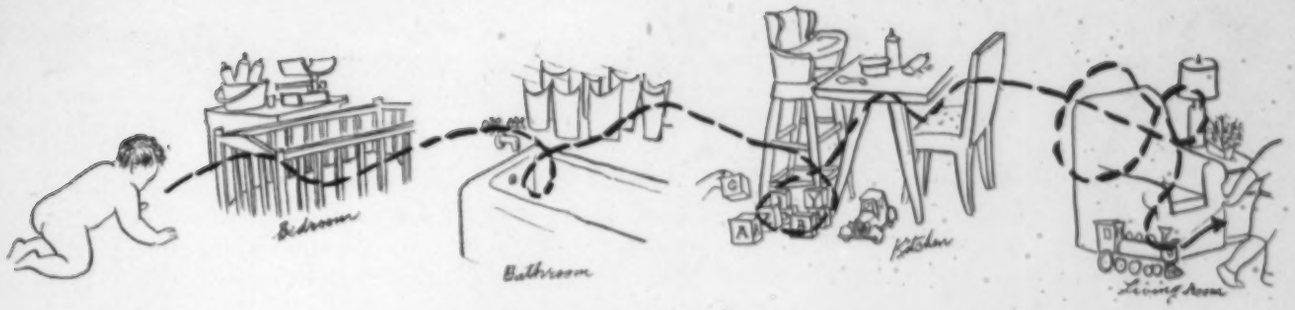
Later, when the children are in their teens, big meals are eaten two or three times a day by five or more people simultaneously. Mother now has help in cooking, serving, and washing up — but the working party has to be organized, and there must be space for all to work.

Finally the older couple, whose children have left the family, have special requirements of their own. They need less room, and want more compact arrangements to save extra steps.

The purpose of the changes outlined in the preceding paragraphs is not to suggest a bewildering variety of changing requirements that appear to defy a universal solution, although it is true that by these criteria most plans will fail. It is to qualify the highly general information contained in the opinion polls which, unless they sort out families by growth levels (which none of them do), are bound to be of limited utility as a guide to what particular families want and need. From a better conception of these family growth levels it can be demonstrated that no matter how big or how convenient the separate dining area is made, you can't ignore the necessity of some eating being done in the kitchen at some stages of family development. Nor does this mean that space provided for eating in the kitchen has to be dead space the rest of the time. It is certainly possible to provide space for eating in the kitchen that can be used for other purposes as well. That's the trouble with the fixed arrangements implied by the conventional dining alcove.

Flexible planning, in time as well as space, however, demands an intimate knowledge of family living, and at this point the problem becomes further complicated.

A lot of things are done in the kitchen besides cooking. Those studies that show women spending one-third of their time in the kitchen don't mean that eight hours a day are spent cooking, or even laundering. Even a non-cooking male knows that three respectable meals a day can be prepared in two or three hours. The rest of the time in the kitchen is spent there for the greatest imaginable variety of reasons, ranging from the fact that it is the only room in the house with an easily washable floor to the fact that since you have to be in the house while the baby is taking a nap or outdoors in the sun, you might as well polish



The youngster's regular routine and restless roamings vary by the year and by the minute, but a mother's steps, time and nerves can be saved by thoughtful planning

the silver, or do a little mending — and the kitchen is a handy place to do it. The analysis of activities by stages of family development also argues convincingly that at certain periods in the family's life a great deal more time will be spent in the kitchen than at other periods.

Perhaps it was to have been expected that the only major change in the design of kitchens in two decades would come not from the architects but from home economists. Mrs. Mary Koll Heiner and Miss Helen E. McCullough, with their dimensional analysis of work areas and storage, have only begun a process that will be continued by home management experts and others until the kitchen we know is transformed beyond all recognition. But mark that while research of this sort is generating the most devastating criticism of existing kitchen designs they have yet faced, no new and wholly satisfactory designs have yet appeared.

The kitchen has not been designed that reflects all the requirements. What has been done to meet the findings of time-motion studies, or of dimensional analysis, has not yet been matched by solutions to other kitchen activities that are equally important at some stages of family living, notably child care. The concept of a kitchen as a work center, from which the housewife can control all her manifold and conflicting responsibilities during the day, has yet to be translated into reality.

Such information — and it is only a taste of a vast amount more that is available to you — can be put to work best if you use it as an assumption to check with the client. You don't really want to discover how they will live in the house you design for them; you should know that already. And you should know a great deal more than the client. What you are interested in finding out are the minor variations on this theme that lend spice and individuality to the problem and its solution. The great advantage you have is that you know more about families in general. Your great disadvantage to start with is that you don't know as much about the particular family for whom your house is designed.

What you know — or can know — better than the client is what lies ahead for him. You know more about his future requirements than he does. You can design a house he will grow into.

This adds up to a more dynamic view of family living. Perhaps the most important single thing to consider is the changes in family size and needs through the forty year life-span of the average family. Each level has its own problems and its own potentialities that families increasingly seek to develop. They expect architects to help them by providing domestic environments that support optimum living at each stage of family growth.

There is absolutely no question that family living is undergoing drastic and fundamental changes. As it responds to new ideals and new knowledge, as well as to new economic conditions a new family is being born. The President's Conference on Family Life to be held in Washington this May will help make such changes clear. The Housing Section of that Conference can be expected to state the problem in terms quite different than did President Hoover's Conference on Housing and Home Ownership in 1931. The years that intervene have been marked by one decisive discovery: the family is the origin of the house.

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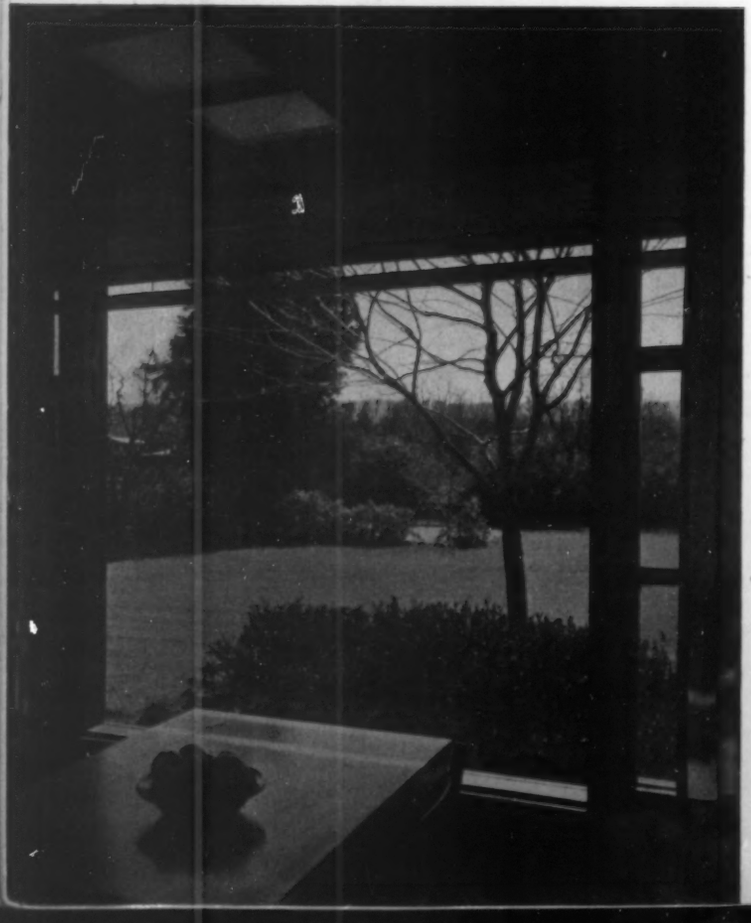
HOUSE FOR DR. AND MRS. JOHN REID, Menloe Park, California

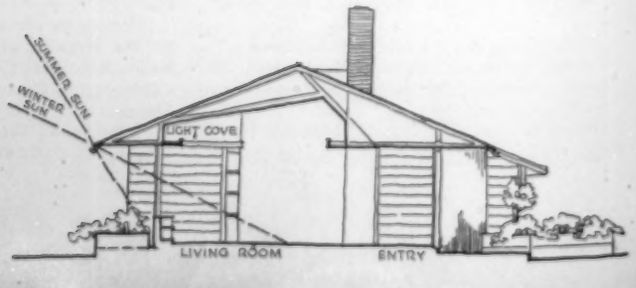
Phillip Fein Photos

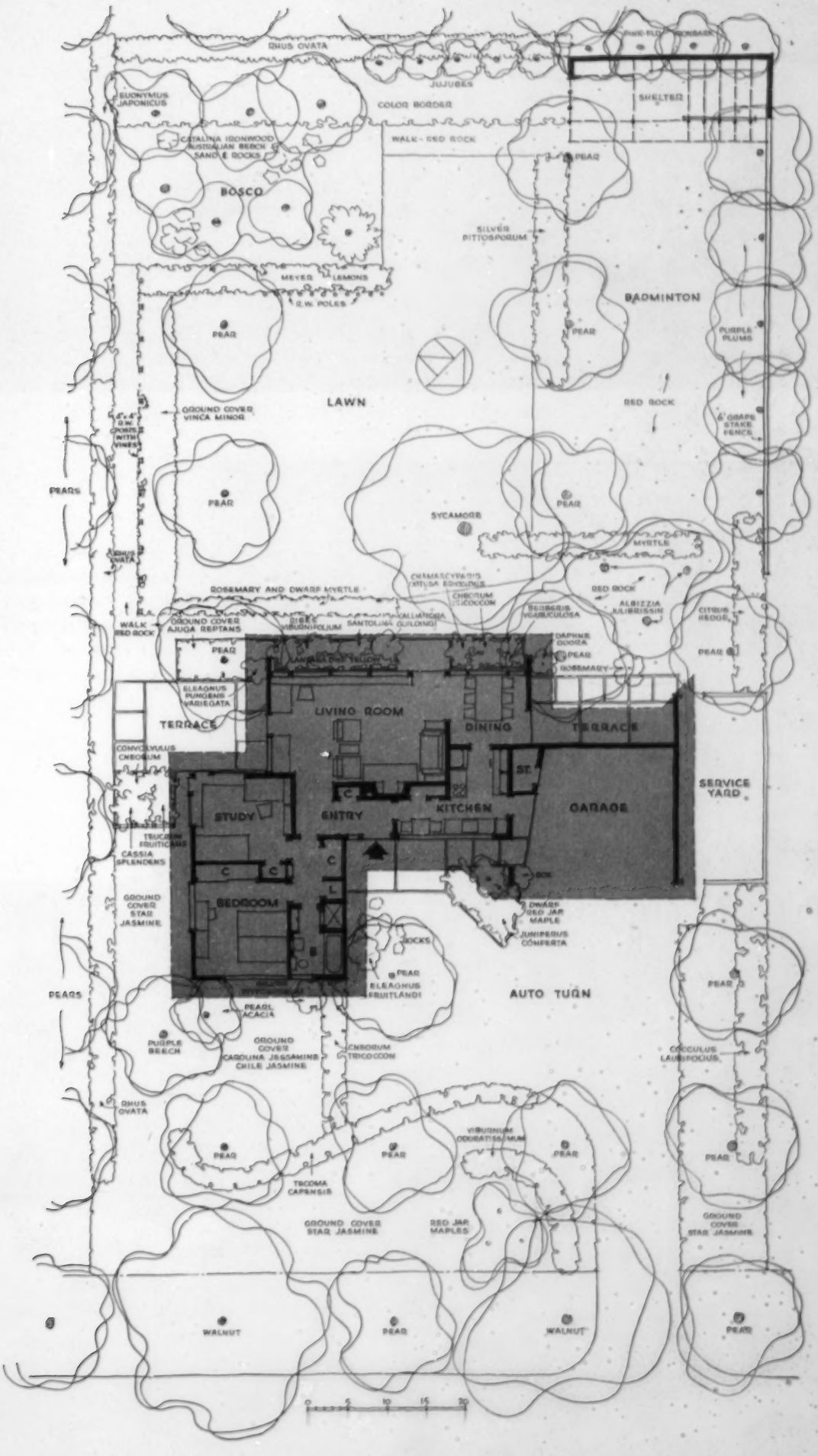


Fred Langhorst, Architect

Garrett Eckbo, Landscape Architect

THE house and garden were planned as an integrated whole and provide the environment desired by the owners, Dr. Reid, who teaches philosophy at Stamford University, and Mrs. Reid, engaged in child welfare research at the University of California. Since they have no children, only one bedroom and accommodations for an occasional guest were needed. The study was essential and it doubles as a guest room at times. The owners preferred morning sun in the bedroom and study, so that they were placed to the east. Terraces provide pleasant outdoor living and the garden is a constant joy.




RHUS OVATA
JUJUBES
SHELTER
EUONYMUS JAPONICUS
COLOR BORDER
WALK - RED ROCK
CATALINA IRONWOOD
AUSTRALIAN BEECH
SAND & ROCKS
PEAR
BOSCO
SILVER PITTOSPORUM
MEYER LEMONS
R.W. POLES
BADMINTON
PEAR
PEAR
PURPLE PLUMS
LAWN
RED ROCK
GROUND COVER VINCA MINOR
6' GRAPE STAKE FENCE
PEARS
PEAR
PEAR
SYCAMORE
MYRTLE
RHUS OVATA
ROSEMARY AND DWARF MYRTLE
RED ROCK
WALK RED ROCK
GROUND COVER AJUGA REPTANS
ALBIZZIA JULIBRISSIN
CITRUS HEDGE
PEAR
PEAR
ROSEMARY
ELEAGNUS PUNGENS VARIEGATA
TERRACE
LIVING ROOM
DINING
TERRACE
CONVOLVULUS CNEORUM
ST.
SERVICE YARD
STUDY
ENTRY
KITCHEN
GARAGE
TRUCHIA FRUITICANS
CASSIA SPLENDENS
BOX
GROUND COVER STAR JASMINE
BEDROOM
DWARF RED JAP MAPLE
JUNIPERUS CONFERTA
ROCKS
PEAR
ELEAGNUS FRUITLANDI
PEARS
AUTO TURN
PEAR
PEARL ACACIA
PURPLE BEECH
GROUND COVER CAROLINA JESSAMINE CHILE JASMINE
CNEORUM TRICOCCON
COCCULUS LAURIFOLIUS
RHUS OVATA
PEAR
PEAR
VIBURNUM ODORATISSIMUM
PEAR
PEAR
TECOMA CAPENSIS
GROUND COVER STAR JASMINE
RED JAP MAPLES
GROUND COVER STAR JASMINE
WALNUT
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WALNUT
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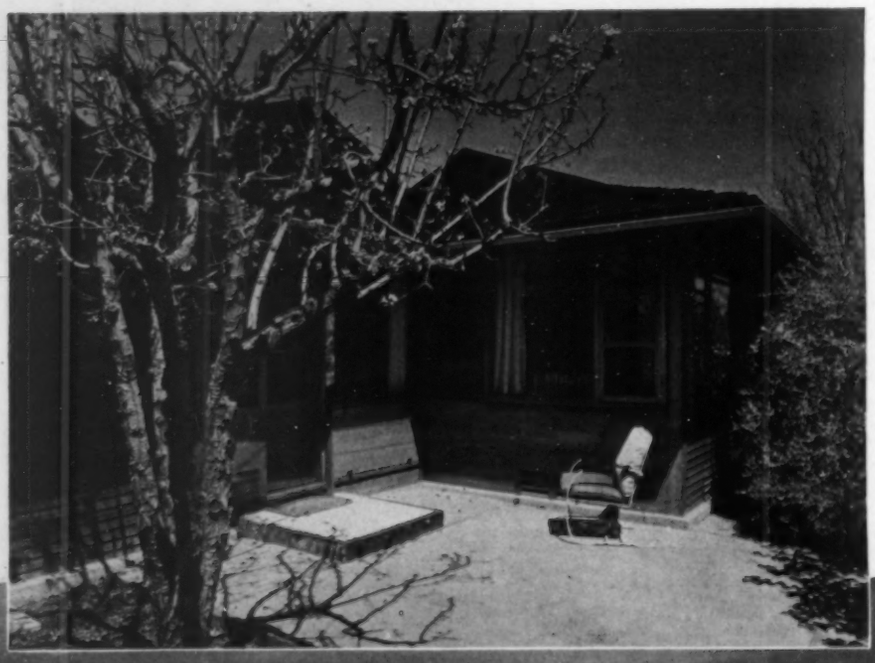
0 5 10 15 30

Roger Sturtevant Photo



Above, the generous overhang of the roof shields the living room windows from the summer sun. Left, the terrace to the south east enjoys morning sun and afternoon shade. Below, view from the north showing garage, entrance, and bedroom wing

The sense of spaciousness in the living room is increased at night when the curtains are drawn and the horizontal expansiveness of the daylight view no longer counts

Roger Sturtevant Photo

The wood ceilings of the dining room and the entry contrast with the light-colored plaster of the living room, and their lowness adds a note of pleasant intimacy accented by the appropriately flush recessed lighting

Phillip Fein Photo

HOUSE FOR MR. AND MRS. LYLE B. CLOTHIER,

Tucson, Arizona

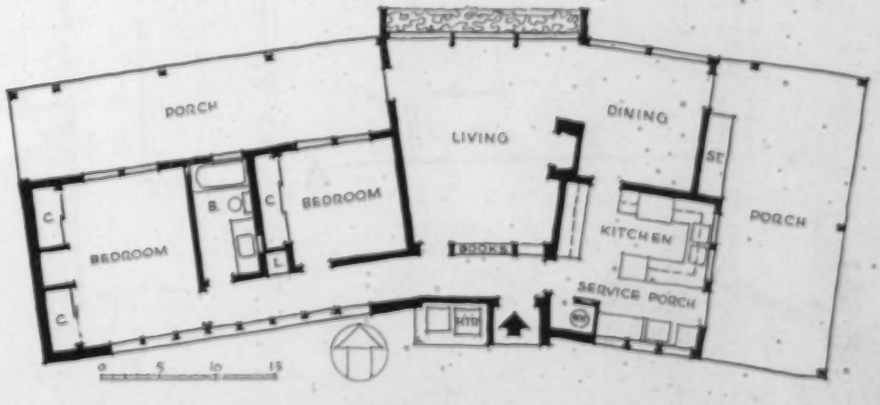
Arthur T. Brown, Architect

Western Ways Photos

Privacy on the street front is achieved by high windows with louvrex obscure glass. The shingled housing for the heater, next to the front door, forms a pleasant contrasting note in the long brick facade. Logical variations in ceiling heights add attractiveness to both interior and exterior

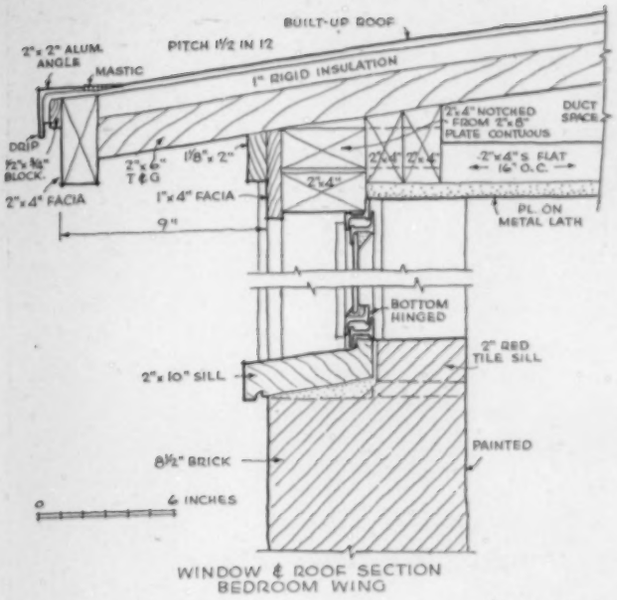
WHILE this house for Mr. and Mrs. Clothier and their 18-year-old son faces south on a busy street, it commands an expansive view of the Catalina Mountains to the north. It therefore appears to be a "solar" house in reverse, with maximum glass area on the north to take advantage of the view, and high windows on the south for privacy. The house is planned so that the doorbell can be answered from the kitchen and service porch without disturbing the living and dining area. High bookshelves form a screen between the entrance passage and the living room to insure privacy and still preserve a sense of openness. The living room never becomes a corridor for other rooms. The service space has been arranged for convenient servantless living and the "service porch," as part of the kitchen, provides a pleasant uncramped area for laundry and sewing activities.

While not large, the house seems unusually spacious because of the openness of the living and dining area with the high ceiling, and because porches to the north and east provide for convenient shaded outdoor living. Heating and cooling are provided from a central location adjoining the door



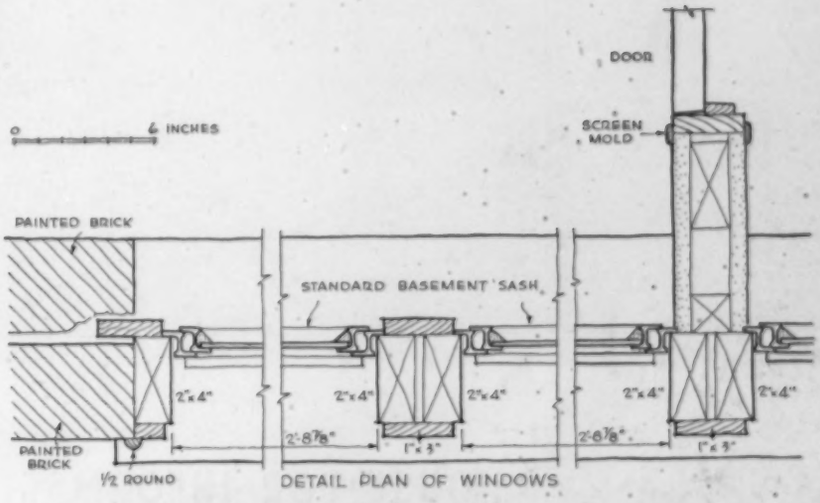
The gracious living room spreads its splayed walls to embrace the view of the Catalinas. The exposed ceiling beams also direct one toward the view. Pictures are unnecessary when one whole wall of the room becomes an ever-changing vista. The dining area is open to the living room, except for the fireplace

Western Ways Photos



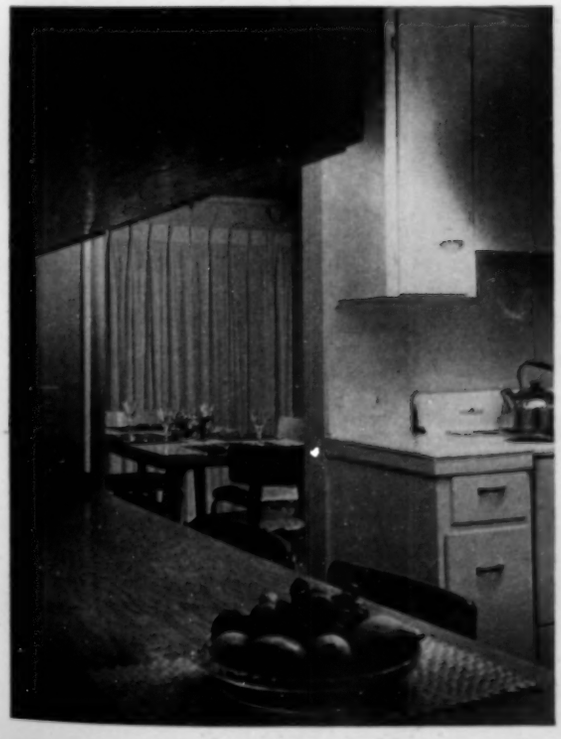
WINDOW & ROOF SECTION
BEDROOM WING

Details of the window and roof construction of the bedroom wing show the use of frame members as jambs, heads and facias, and the reduction of the number of pieces to a minimum consistent with good construction and design. Metal windows in some climates can be installed as simply and directly as here shown



DETAIL PLAN OF WINDOWS

Cabinets between the kitchen proper and the laundry-sewing area, called service porch on the plan, open from both sides. Duct work for heating and cooling is visible only in the kitchen above the convenient cabinets

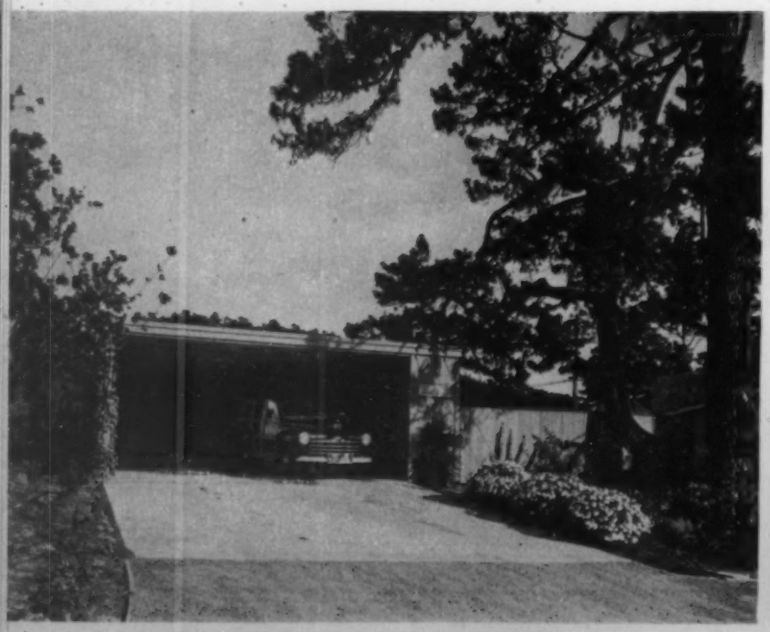


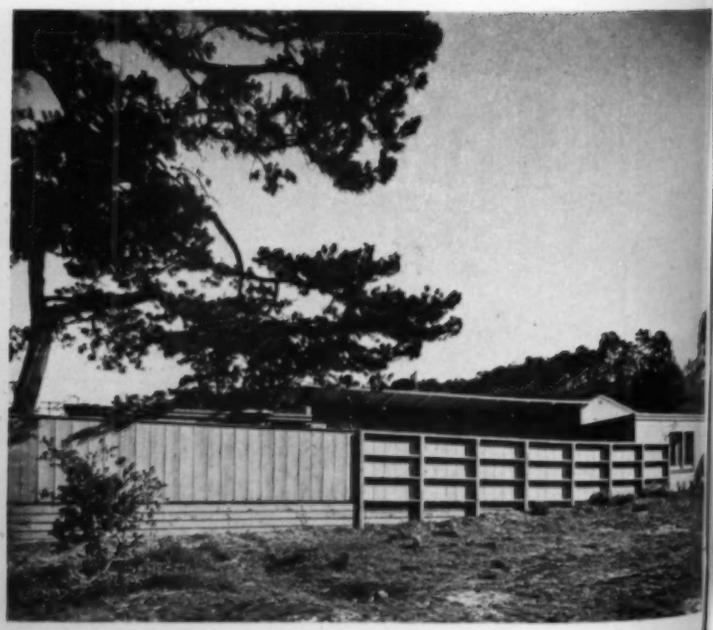
Morley Baer Photo

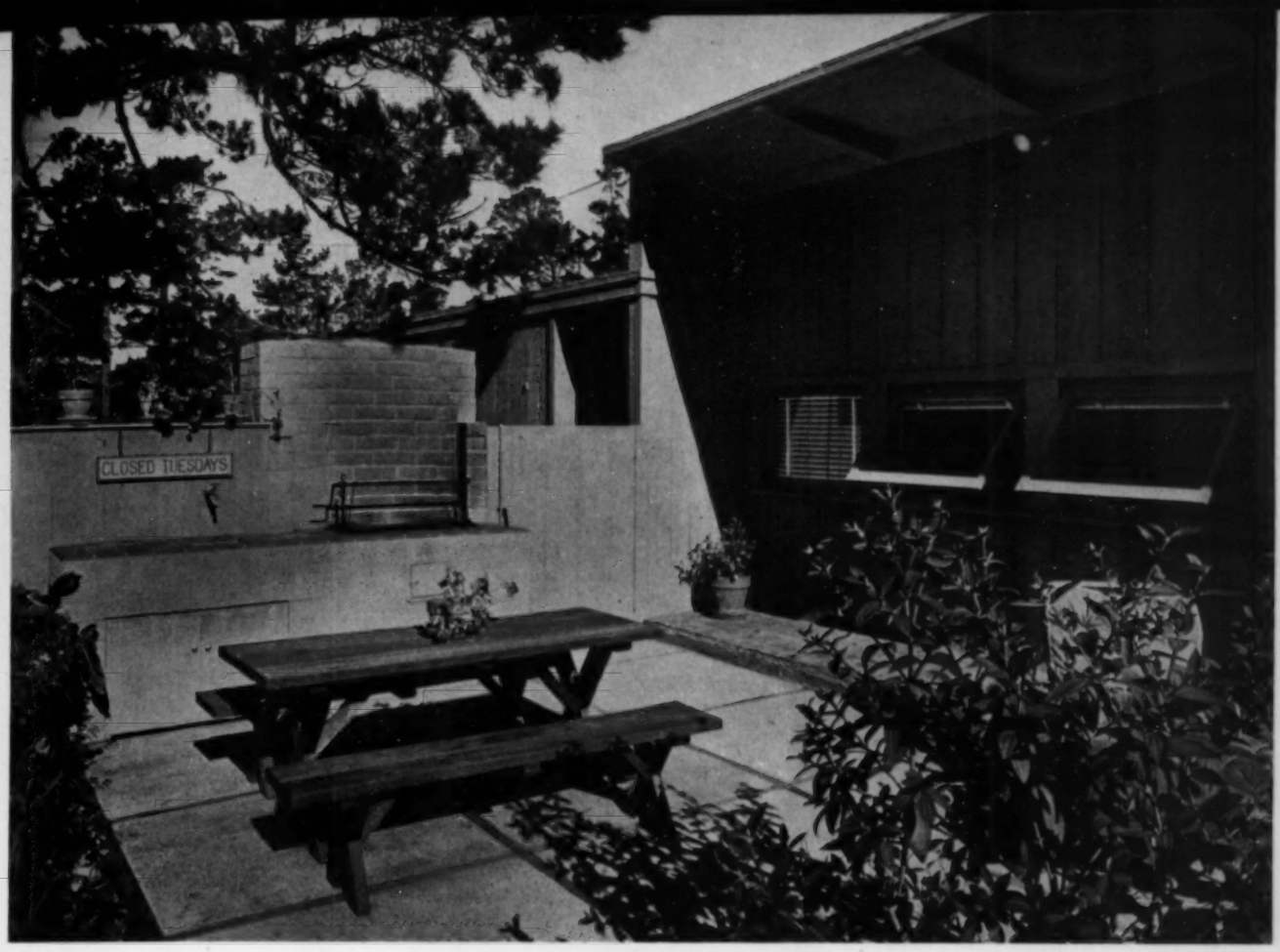
HOUSE FOR INFORMAL LIVING, Carmel, California

George H. Woolsey, Designer

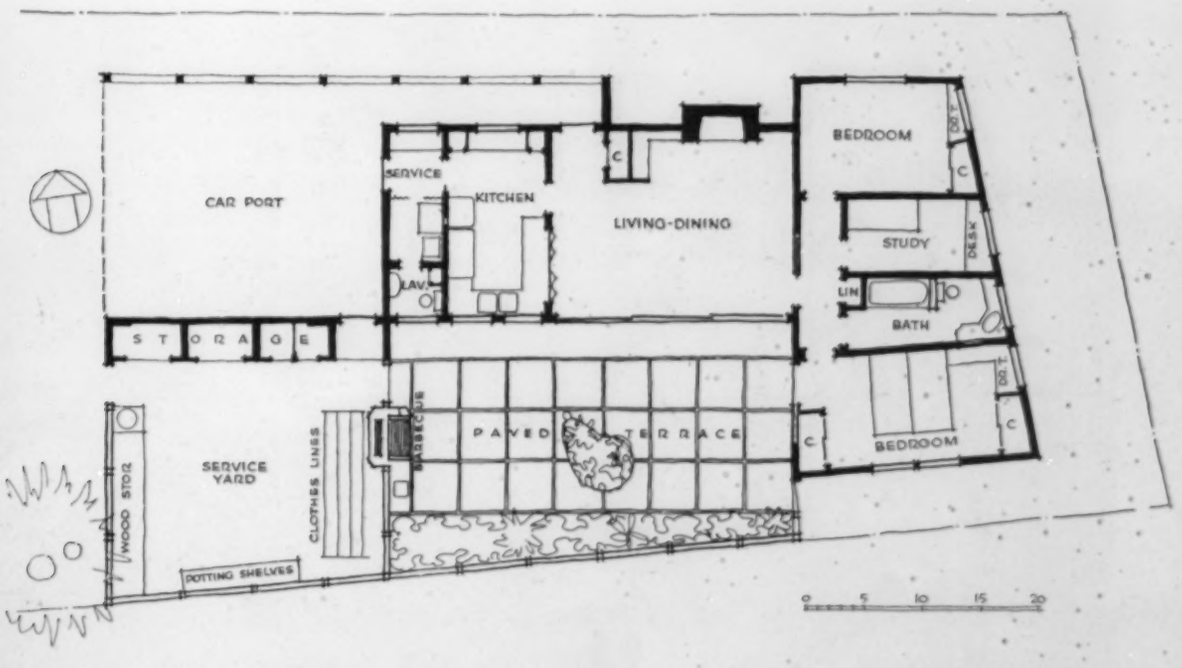
Stolte, Inc., Contractors





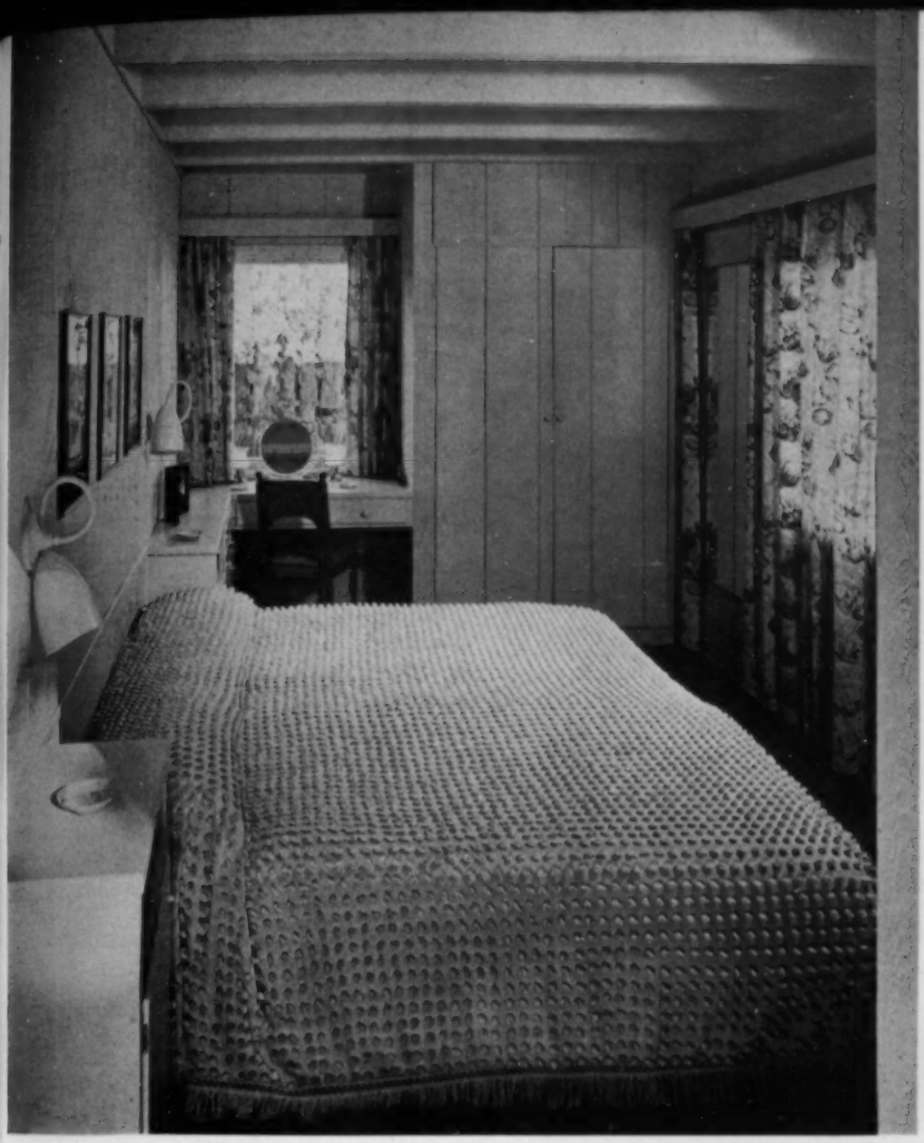


THE problem presented was to provide on the small irregular lot a maximum of space for informal living, both indoors and out. A maximum of privacy was desired on the exposed lot, which dictated a fence to enclose an outdoor living terrace and the service yard. Indoor and outdoor living areas are merged by sliding glass panels. The kitchen readily serves either indoor or outdoor dining preparations, though the barbecue is the center of interest for outdoor meals. Both the service entrance and the entrance to the living area are provided through the carport and service yard. A convenient lavatory is tucked away next to the kitchen. The house is heated by an electric radiant system consisting of two zone-circuits of half-inch steel cable laid in concrete and connected to thermostatically controlled low voltage transformers. The finished floor is ceramic tile.



The fireplace merely provides supplementary heat since the embedded electric radiant cables produce a floor temperature of 70° to 74°, supplying between 35 and 50 Btu. per square foot with a power consumption of 10 to 15 watts

Morley Baer Photos



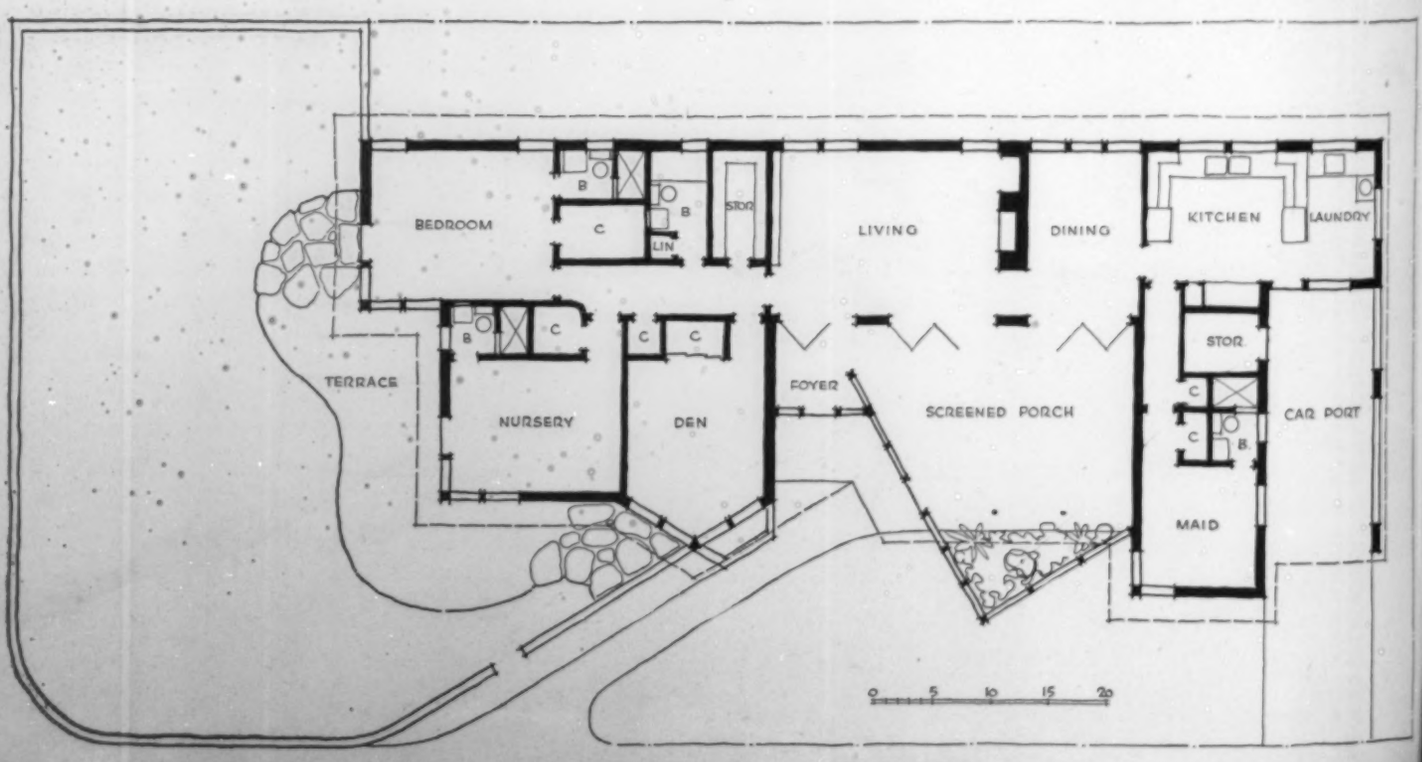
Above, an abundant supply of towels is always available on the simple but ingenious wall rack in the bathroom. Below, the kitchen is well-lighted day or night and is provided with adequate cabinets. Louvered shutters close the pass cabinet from kitchen to dining room

HOUSE FOR DR. NELSON ZIVITZ, Miami Beach, Florida

Igor B. Polevitzky,

Architect

A SMALL, narrow, corner lot always presents difficulties, but the architect was able to provide maximum flexibility, desired privacy, and a house zoned for quiet, for active living, and for necessary services. The bedroom and the adjacent nursery for the three-year-old boy are well protected from living room activities by the den, storage, baths and closet. The den becomes a guest room or powder room as occasion demands, with a bath accessible.



Jan Hankowski photos

The screened porch is practically a semi-outdoor living room with a corner planting area large enough to be attractively planted the year 'round and also to screen the occupants from the glances of the curious. Folding doors make the porch a part of the living room or dining room, providing maximum flexibility in the use of the rooms separately or together

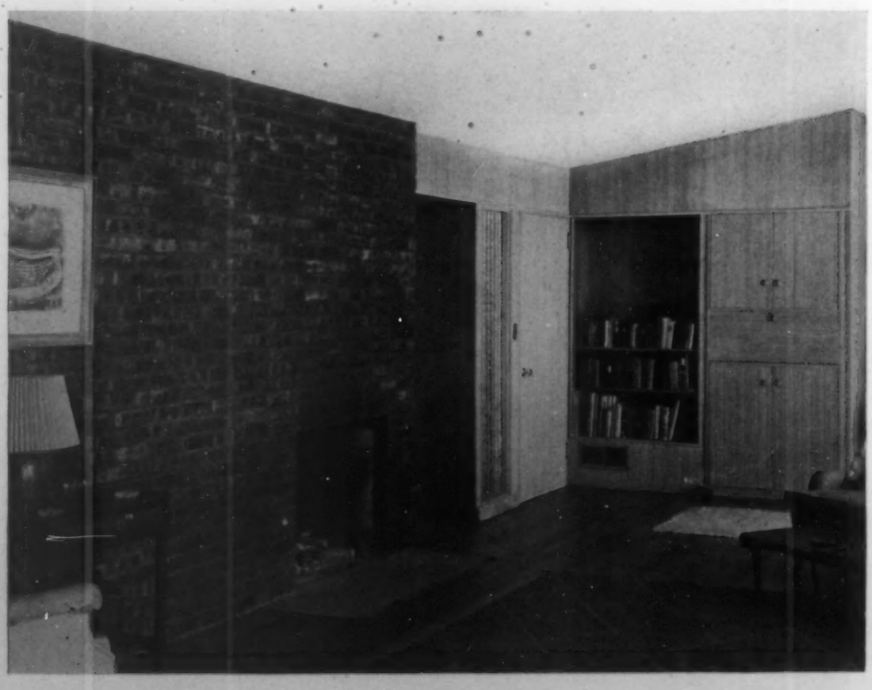
The fireplace with its bookshelves and cabinet separates the living room area from the dining room and effectively screens the dining room activities. The passage from living room to dining room is open, without a door, which gives an added sense of spaciousness to both rooms

The dining room is adequate for family meals and can be extended to take in part of the screened porch on festive occasions. The large kitchen-laundry is efficiently planned and has three exposures for maximum ventilation. The open car port can be fenced in as a cool play area for the child, with full visibility and control from the kitchen

HOUSE FOR MR. AND MRS. ALFRED L. CARDINAUX, Hartsdale, N. Y.

André Sive, Designer

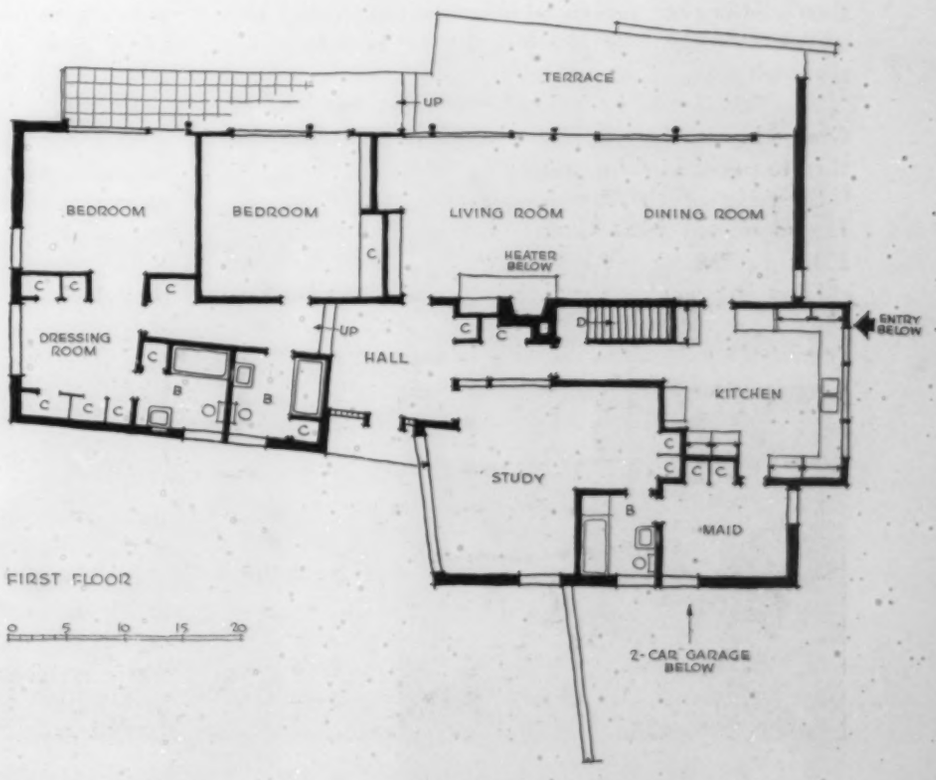
Laurence M. Loeb, Architect



Both interior and exterior are treated with the utmost simplicity, the varying textures and colors of materials forming interesting contrasts—the brick work of the fireplace with the natural finish of the plywood cabinets, the smooth ceiling with the soft fabric of the window drapery

Rudolph Edward Leppert, Jr. Photos

THE owners originally had this house designed for a location in the suburbs of Paris, so when business demanded location near New York City, a suitable hill-top site was found. The site permits a two-car garage below the service portion of the house, and the heater is centrally located below the living room. Advantage was also taken of the slope of the site to increase the ceiling height of the dining-living room portion without making a break in the continuous plane of the roof which has a slight slope from south to north. The ceiling of the living and dining room slopes up from the fireplace toward the view. A screen is used to divide the dining portion from the living room when necessary, and outdoor living is provided along the unobstructed terrace which is partially protected by the wide overhang of the roof, serving all the main rooms of the house. Mr. Cardinaux uses the study as a studio work-room and it also serves as a guest room.



Out of the early work of Charles Sumner Greene and Henry Mather Greene, there arose the "California bungalow" — "at first to attest their insight and then to succeed in almost burying them." By awarding the brothers a Certificate of Merit, the Southern California Chapter of the A.I.A. has called attention to qualities in their work which are fresh, universal, and illuminating

Cole Weston Photo

A NEW APPRECIATION OF "GREENE AND GREENE"

When the Southern California Chapter of the A.I.A. met in Los Angeles in March, and awarded a special Certificate of Merit to Charles Sumner Greene and Henry Mather Greene, "for design and execution of work in Architecture and the Fine Arts," there was common belief that the Chapter was more honored in the giving than the Greene brothers were in the receiving.

The Greene brothers had been pioneers, had done their joint work from 1894 to 1914, had continued individually after that, and lived long enough to reap the delayed harvest of the pioneer in a familiar cycle. First the quick deep strike, the sudden full command through grasp of new opportunity in fresh territory; then wild-fire but superficial imitation obliterating the source; oblivion; rediscovery (if life has been long) by the intelligence of a later generation.

The "California bungalow" was what rose out of Greene brothers' work, first to attest their insight and then to succeed in almost burying them.

Speaking at the Los Angeles meeting, Henry L. Eggers quoted what Charles Greene had written in 1915:

"Sixteen years is a very brief space of time when one thinks of the building of Rome, but in these sixteen years the growth of California has been phenomenal. Our Rome has not yet been built, but we have covered the ground. Beneath all this haste . . . and sordidness . . . there is wholesome enthusiasm born with the sight of the soil and the sun of this wonderful land. One is forced to believe that in the end it must triumph over exotic tradition (he had mentioned the Missions and the Spanish-American style) and produce a style of architecture best suited to its own endless possibilities.

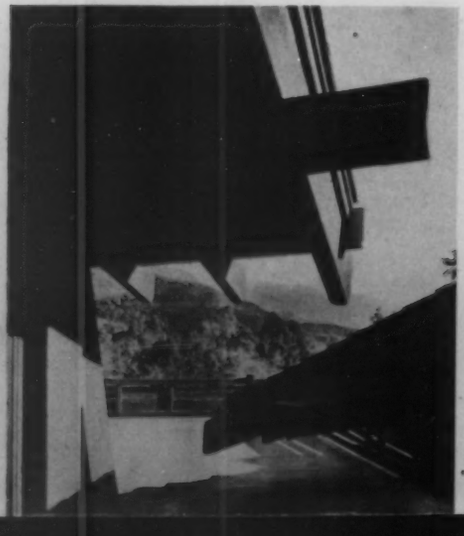
"In fact, between the automobile mania and the bungalow bias, there seems to be a psychic affinity. They have developed side by side and they seem to be the expression of the same need and desire, to be free from the commonplace of convention. It is the growth of the germ of California's incentive, the mere joy of living, newly discovered. . . ."

But in the Greene brothers' minds this was not just a mass movement to be met by indiscriminate mass solutions. Charles Greene's remarks are filled with awareness of the importance of the individual owner and his mode of life, of the poison of easy pictures ("they demand drawings and pictures; they want to see something done, when in fact . . . no perspective for the owner of a bungalow should be made until the plans are ready for bids"), of the solution as a growth ("one should work in the spirit of real adventure. If the problem be solved at the outset, what interest can one be expected to take?")

Mr. Eggers went on to quote salient passages from the manuscript of a forthcoming book of 1948, on the work of Greene and Greene, by Jean Murray Bangs. (Miss Bangs will be remembered as the author of the article in ARCHITECTURAL RECORD for January, 1948, on another California pioneer, Bernard R. Maybeck, whose architecture she will deal with fully in another book.)

"The development of the Greene and Greene style,"

Merge Studios Photos

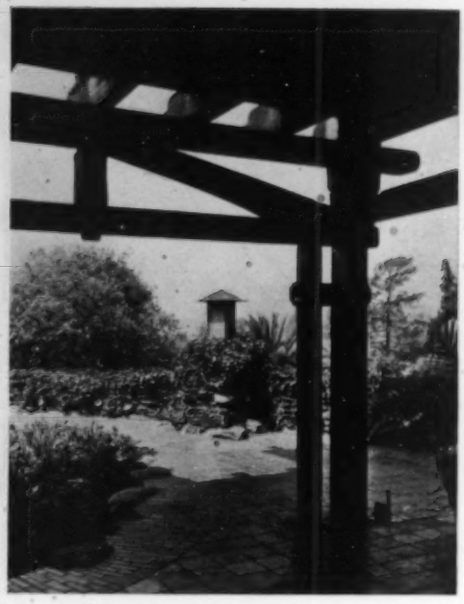


writes Miss Bangs, as quoted by Mr. Eggers, "began with a small house they designed for Arturo Bandini in 1903. Mr. Bandini, son of the Don Juan Bandini mentioned in Dana's TWO YEARS BEFORE THE MAST, came into the office asking for a 'California House.' The plan he had in mind was the one the Spanish have used everywhere in the New World. It consisted of a series of rooms, one room deep, strung around three sides of a hollow square. The rooms are entered through each other, railroad flat style, or through a covered open passage running around the inside of the square — the patio. The Bandini House was built on this plan, out of the simplest possible materials, redwood boards and bats, shingles, and cobblestones from the bed of the nearby Arroyo Seco."

This plan arrangement, Miss Bangs goes on, became almost synonymous with the State and indeed with the West; but the Greene brothers went on to execute it

The David R. Gamble house of 1909 (above) and the Robert R. Blacker house of 1907 (below) both attest the Greene brothers' powers of complete grasp and broad integration. Structure is exposed but with extreme regard for permanence and for enhancement, not deterioration, through the weathering. Interior development anticipated most "modern" devices; equipment and furniture were correlated

Merge Studios Photos



"We are aware of stick and board . . . but since the nature of wood does not adapt itself to flush surfaces, no attempt was made to achieve continuity belying the multiplicity of the parts composing it". Yet sheet roofing surfaces were really continuous, rolled over at the eaves to form an integral gutter. "A pure artistic expression deeply concerned with anonymous aims of the period"

in wooden construction which raised logic and common sense into a supremely unified language and expression, of a vivid and solidly reassuring virtue.

They were greatly influenced, says Miss Bangs, by the efficient discretion of the Swiss and the subtlety of the Japanese. (Even a cursory examination of accompanying illustrations show this meeting of Occidental and Oriental modes of thought.)

"They emphasized the natural qualities of the wood. Until the period of laminated wood, wood was used in the form of the stick and the board. In the work of Greene and Greene we are constantly aware of the stick, used as a post, a beam, or composing a lattice, trellis, or truss; jointed together by notch, dowel, or strap — the stick composing the rhythmical pattern and the joints the decorative detail. We are aware of the board, wide and thick, joints open or closed, with lap, plain face, batten, or tongue and groove; or the board long and narrow, parallel or criss-crossing in woven open-work patterns, as in a fence or terrace railing. Or we are aware of the board, short and thin, methodically arranged in a textural pattern or partial overlay in the large expanses of shake-covered walls." She mentions the aversion to the unnaturalness of flush exposed surfaces, and the consequent use of "broken line" and "segmental structure," which is aesthetically "hardly less continuous for being broken."

The conscience with which such detailing foresaw problems of preservation is an example especially needed at this time. "When these men found it necessary to provide for things like under-floor and attic ventilation they worked at it until they found a means of doing it beautifully and adequately." The overall effect, says Miss Bangs, was "generous, natural, and unashamed" — and she might have added, prudent.

The same diligent insight caused them to prefigure innumerable devices of plan and equipment which we like to think of as especially "modern."

"The Blacker house (see illustration), built in 1907, contains a storage wall, sectional furniture (designed by the architects) and a two-purpose room divided by a sectional glass wall which can be folded out of the way.

"It has modern fenestration and facilities for outdoor living equalled in few houses of today. Its eaves admit the sun in winter and exclude it in summer. It faces toward the sun and away from the street. Like most of the Greene and Greene houses it is fitted into the landscape. In the Cordelia Culbertson house (1911), the glass wall of the 'garden room' can completely disappear above ceiling height by the simple expedient of a parapet wall and adequate counterbalances. In the Thorsen house (1908) and the Crowe house (designed by Henry M. Greene) are large flush panel ceiling lights. The Crowe house has a long gallery on the south, one side of which is almost entirely of glass. Each bedroom in the Gamble house (1909) is double . . . the outer unit having the old-fashioned name of 'sleeping porch' just as the garage bears the old-fashioned name of auto 'barn'."

Symbolic of the Greene brothers' close attention to convenience was their raising of work surfaces for women at that early date, and their ingenuity in the design of closets.

What was said about adaptation to site and surroundings was conveyed with perhaps equal force by pictures assembled for the meeting by a committee on which Mr. Eggers served along with Eugene Weston, Jr., and Myron Hunt, chairman. This exhibition is to travel, and will be seen later in New York, in the Museum of Modern Art.

What emerges is the sense of deep integrity in a wide integration. "Greene and Greene helped pioneer the modern house, and built it so conveniently, so graciously, and so without talk that people accepted it hardly knowing what it was."

DESIGN AND SITE FABRICATION ECONOMIES COORDINATED IN SMALL HOUSE TEST PROGRAM

By James T. Lendrum, Associate Coordinator, Small Homes Council, University of Illinois

OUR first two frame houses are finished to the point where it is now possible to make exact comparisons of the time required for each of the almost fifty operations into which we have divided the work. What is probably more important, we can make some observations as to why savings are possible, and which new techniques seem to be of greatest value.

The first house, F-1, was built with conventional methods throughout. In the second house, F-2, we used the following variations:

1. Precut lumber for floor joists.
2. Precut lumber for wall studs.
3. Exterior walls assembled on floor (without sheathing) and tipped up into place.
4. Preassembled lightweight roof trusses.
5. Installation of plumbing, heating, and wiring before interior partitions were erected.
6. Installation of gypsum board throughout ceiling and exterior walls before interior partitions were erected.
7. Installation of prefinished flooring over entire area (except kitchen and bath).
8. Interior partitions assembled on floor and tipped up into place (as far as possible).
9. Gypsum board installed in horizontal sheets in accordance with detailed layout.
10. Door and window trim precut by one operator.
11. Change in detail on the cornice and gutters.

The following variations were included in F-3 house, and the results are

SUMMARY *In reporting to the sponsors* of this small-house test program, in which basic economies of the Industry-Engineered house and the application of assembly-line techniques are tested in single houses, the author summarizes early findings as follows:*

1. Costs can be reduced by material-saving details and labor-saving practices.
2. Savings can be achieved only through the use of some new techniques.
3. Roof trusses are the key to major savings. (Savings on wall and floor installations are greater than on the trusses themselves.)

From our experiences, we can recommend the following as necessary procedures to reduce costs:

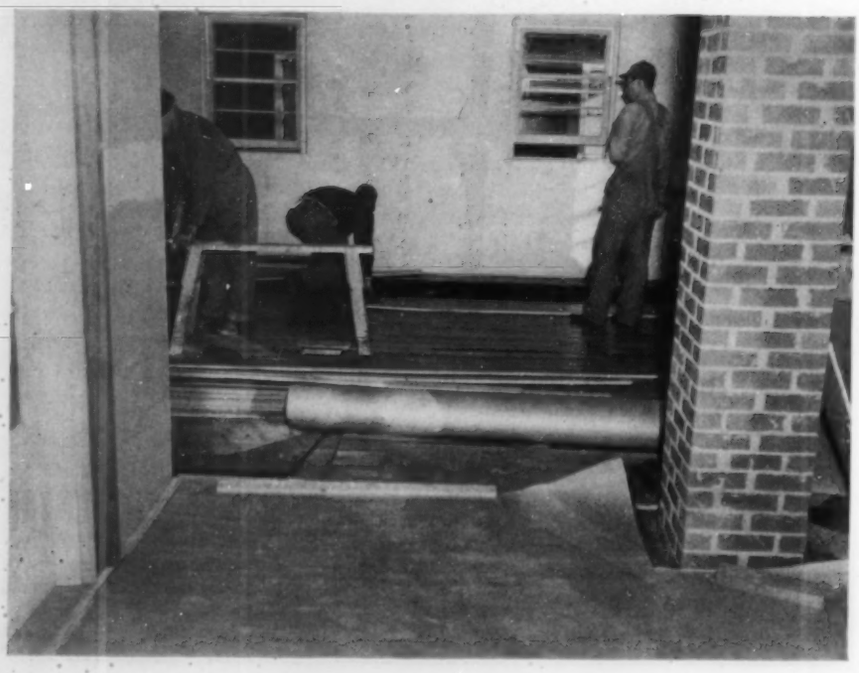
1. Tip up exterior wall—assembled with sheathing before lifting into position.
2. Lightweight roof trusses.
3. Preassembly of gable ends on jig table.
4. Interior finish material on walls, ceiling, and floor installed completely before partitions are erected.
5. Careful layout of all sheet material (sheathing, wall boards, etc.).
6. Precut wall framing material.
7. Preassembled windows.
8. Door and window trim precut.

The following produced savings but not as great as those listed above. These then might be classed as optional procedures.

1. Precut floor joists.
2. Preassembled cabinet work.
3. Tip-up construction of interior partitions.

** Sponsors: Industrial Research and Development Division, Office of Technical Services, U. S. Department of Commerce; Producers' Council; National Retail Lumber Dealers Association; Small Homes Council, University of Illinois*

Above: walls being assembled on subfloor, one wall in place, roof trusses in background



Above and below: finished flooring is laid before partitions are erected, and protected with one layer of wrapping paper and one of sisalkraft, held down by batten strips

available and therefore are included in this study.

1. Sheathing applied to exterior wall studs before walls are tipped up into place.

2. Gable ends assembled on jig table instead of being built in place.

General Comment

Most of the savings of any importance can be attributed to one item — the use of a roof truss, which left one large open room in which to work. To us, this is the key to the Industry-Engineered House. In addition to the very obvious savings on such things as flooring, ceiling, and wall surface materials, there are some others perhaps not so obvious, some of which do not show clearly in the time study, but do show in a chronological analysis of the total job development. Some of these savings are:

1. The entire job is under roof in a minimum time.

2. The interior is available to the plumbing, heating, and electrical contractors in a minimum of time after the job is started.

3. The exterior work can be done by the carpenters while the mechanical trades are working on the inside.

4. Complete freedom for the plumber in particular, because he can make his layout in the simplest possible fashion, and not be required to dodge around and through studs with inflexible pipe and fittings.

5. Chimneys can be constructed somewhat more easily (reason same as for plumber).

The one disadvantage is in the electrical system. Roughing in for the wiring of the outside wall must be completed before wall board is applied, and to obtain any degree of efficiency the electrician must be on the job when the interior partitions are erected.

The drawing on page 143 shows the order and method of erecting the interior partitions. The tip-up idea is relatively simple in theory, but can get quite complicated in practice, due to the size of the pieces involved. Note that we had three types of partitions — those with no wall board, those with wall board on one side, and those with wall board on both sides before being put into place, as well as one partition (the plumbing wall) which was built in place.

The savings in the Industry-Engineered House are of two types. One is the material savings from the use of modular materials inside and out and simple spans. These were achieved even in our F-1 house because they are almost automatic. A house less well organized in plan would have been much worse on a time study basis than was F-1.

The rest of the savings of this house are not automatic; you have to go after them. They require considerable layout and job supervision until the particular

workmen have become familiar with the job. You can force the savings out of one house, as we have done. The same men could go on to other houses and secure most of these savings with no further direction, merely because now they are accustomed to a different method of operation.

Foundation

There was very little difference in time required for any of the operations up to the laying of the first floor joist *except* masons' time in laying concrete block. Such variations as did exist we felt could be attributed to the fact that the men were slightly more familiar with the house itself, and also by that time they had lost any fear or worry of having a time-study man observing them.

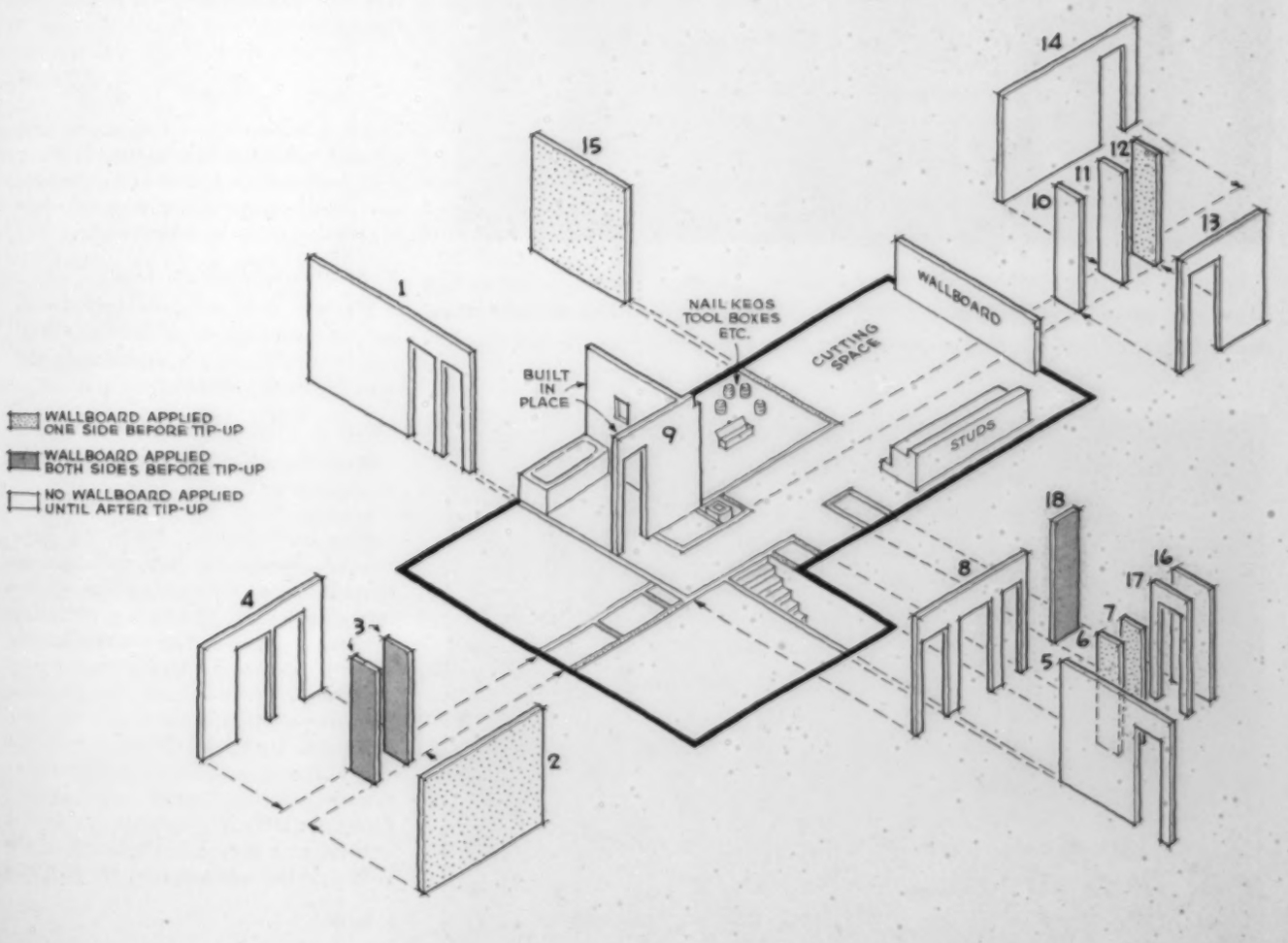
A saving of approximately 29 hours of masons' time in the actual erection of the foundation wall could be attributed to the decision to omit a cross wall in the basement and use a beam to support the floor joist. Our observations on the first house indicated that too much time was spent moving scaffolding back and forth, and that the presence of the cross wall hindered handling of material and added unnecessarily to the total time required. Time *per block* was approximately 30 per cent less than on F-1. A "cut-up" foundation is expensive.

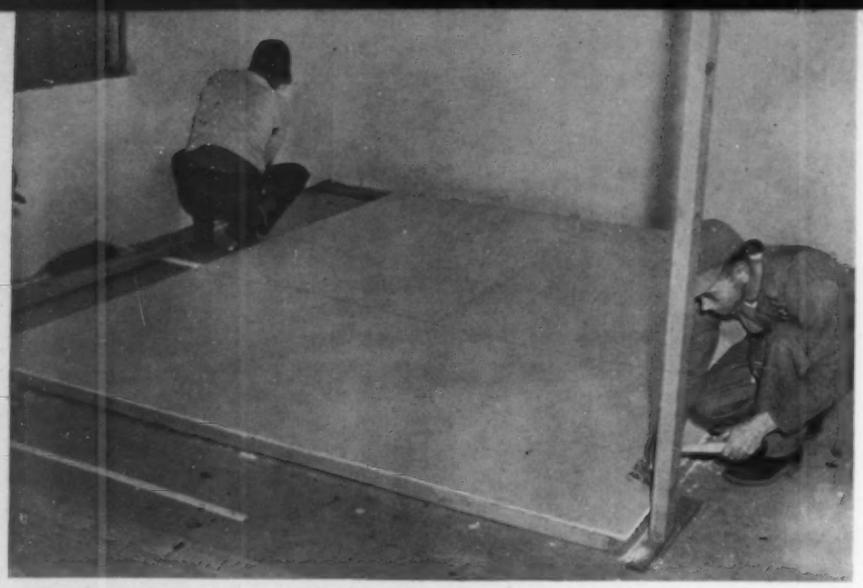
Roughing-in of plumbing is simplified by omitting partitions until shell is finished

Floor Joists and Subfloor

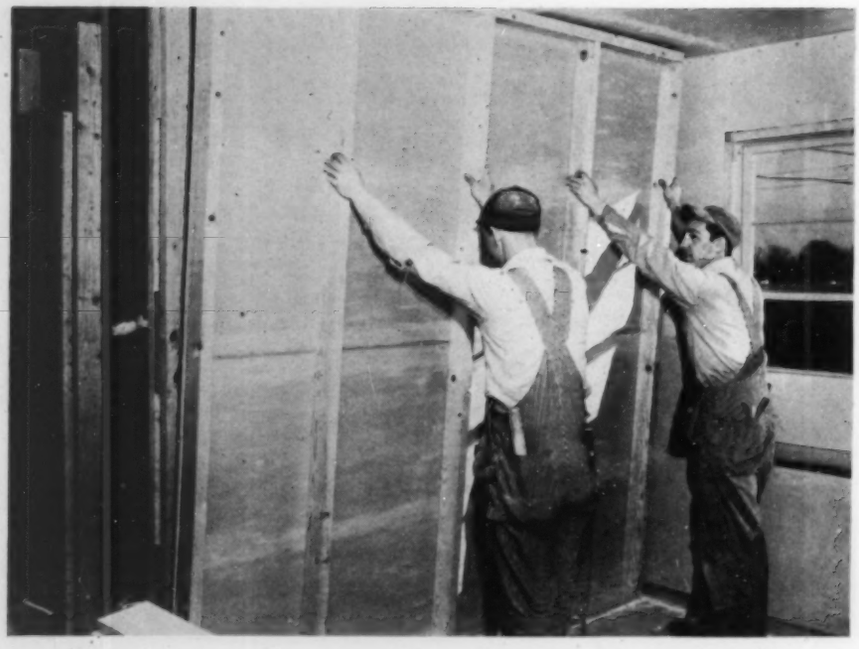
On F-2, we used the same floor detail which we used on F-1; that is, a 16 ft.-0 in. joist was used with a continuous header nailed on the end of the joist. Blocking was added outside the header to bring it out to the line of the sheathing. This detail was a new one to us and to the workmen. Considerable difficulty was experienced with it on F-1, and many of the same difficulties were repeated on F-2. Our lumber was precut to size, but the foundation wall had not been held as accurately to dimension as it should have been. Time was lost in trying to compromise between lumber fixed in dimension and foundation also fixed in dimension but not agreeing with the lumber. Difficulty was also experienced at the header around the basement stairwell and around the chimney. This was due to variation in thickness of the floor joist. Gross time

Tip-up schedule for partitions built on the floor. Numbers give order in which partitions are placed





Above: installing gypsum board on interior partition prior to tipping it up into place



Above and below: in various tests partitions were tipped up before gypsum board was applied, and with gypsum board on one side only, the 4 by 12 size saved on taped joints

for the two was almost the same. (On F-3 a change in detail made possible a reduction of approximately 15 per cent.)

Exterior Walls

On this house we introduced the technique of assembling the wall studs on the floor and tipping them up into place using precut lumber. Difficulty was encountered in sorting and handling the material. This was simplified on F-3, where the sheathing was applied while the studs were still in the horizontal position. The total saving on F-3 over F-2 was approximately 22 hours.

Roof Trusses

This was the first house in which we made the roof trusses on the jig table. (Construction of jig table is included in and charged against the time required for the roof trusses.) The men were not familiar with handling the rather large but lightweight trusses. At first, three men were used to carry the truss, lift it to the top of the outside walls, and tip it into position. Later, they discovered that one man working alone could do the operation much more easily as well as more economically. The important item is not the saving on the roof trusses themselves but the savings which are later possible because of a clear-span construction within the house. On the third frame house, the time required to build and erect roof trusses was almost one-half of the time required for the same operation on the first house. The times are:

F-1	F-2	F-3
78.927	82.097	45.292

The application of roof sheathing and shingles was done in a somewhat more organized fashion, but no major changes were made except in a cutting schedule in roof sheathing to reduce waste.

Windows and Exterior Doors

Windows were preassembled, glazed, and weatherstripped, so there was little opportunity for much variation in the handling of this material.

Exterior Trim

One thing which we have been unable to organize efficiently is the application of exterior siding and the installation of cornice and gutters. While we have secured considerable time reduction on these items, we do not consider our results satisfactory. The 10-hour reduction between F-1 and F-2 on weather boarding can just as well be traced to working conditions, condition of the lumber, tools or variation in the workmen, as it represents less than a 10 per cent variation (142 versus 132 hours). The variation in cornice, louvers, and gutters (approximately 39 hours) is due almost entirely to a change in the detail of the return of the wood gutter. On F-1, the

detail was such that a tight joint had to be made at both ends of almost every piece of gutter. (Time on gutter — 48.970). On F-2, we varied this detail so that in each run of gutter we had opportunity for a sufficient tolerance to make the fitting somewhat simpler. It still was necessary to do some cutting, fitting, and blocking where the beveled siding fitted under the first member of the cornice and the return of the cornice at the projecting roof over the front door still caused difficulty. (Time on gutter — 26.899). On F-3, we modified this detail somewhat more. (Time on gutter — 19.448). Approximately 8 hours of painters' time was saved in the prime coat alone by having all of the material primed before erection.

Interior Wall Board

The biggest single saving on the entire job is in this item. We cannot estimate how much of this saving is due to increased skill on the part of the workmen until we make a detailed survey of the number of feet of wall board taped per hour in each house. The time in application is due entirely to the reduction of the number of pieces handled.

In F-1, the board size was 4 by 8 ft. installed vertically, with the ceiling of each area handled separately. In F-2, as has been described, the entire ceiling and exterior walls were applied before partitions were erected, and wall board 4 by 12 ft. in size was used. In many rooms such as the bedrooms, this means the one horizontal joint around the room and the vertical corners were the only joints to tape. The totals were F-1 — 336.508 and F-2 — 211.645. The quality of workmanship in each case was high. The joints are not visible under the room finish, which is one light coat of texture followed by one coat of water-thinned paint. Time for interior painting has not been completely assembled but no great change is anticipated.

Finished Flooring

The prefinished oak flooring was laid over the entire house before the erection of interior partitions. It was then protected with one layer of wrapping paper and one layer of sisalkraft paper held down with battens at the joints. The time for installing the protective paper is charged against the floor, and a saving of 12 hours was achieved. The carpenters did not like this method of laying floor. It is one of the few variations in technique which we have tried in which objections were voiced afterward. (They have all been objected to ahead of time.) Their complaint was that they were tired at the end of the day because of continuous nailing in a difficult position. In normal floor laying, they had been accustomed to being up and down, moving around and in doorways, and in general varying their work.

Kitchen Cabinets and Trim

Our kitchen cabinets were assembled locally and delivered to F-2 completed but not painted. The process of assembling these cabinets on the job in F-1 was difficult, because at that time many trades were finishing their work and the carpenters had difficulty finding a large enough place in which they could work unmolested. The net saving in carpenters' time was 22 hours, against which must be charged approximately $10 which was paid to the local mill for assembling cabinets. The difficulties we experienced on the interior trim on F-1 caused us to have one man cut all of the door and window trim, so the carpenter merely needed a hammer in order to trim an opening. Orders were given that any variations necessary to get a good miter joint at the corner should be taken up in the margin. (In F-1 the margins were held constant and the joints worked down by hand.) Even with this system, some slight fitting was required, probably due to inaccurate cutting at the miter box. A total of 94 hours saving was recorded by this method.

NOTE: We feel that it is necessary that some standards of workmanship be established with respect to tolerances at joints. In a low-cost house, it does not seem logical that one should insist upon the same degree of accuracy as you would expect in a mansion, yet the fact that we were using a trim which required a miter joint in each corner meant that the carpenters were using the same care that they would on an expensive residence. This same question of tolerances appeared in the degree of sanding expected on a joint in the wall board and other places where the only question was appearance. On exterior work where weather tightness is required, the quality or tolerance is probably not the same.

We have had a large number of visitors here at our project, people who are interested in the Industry-Engineered House, and I have done my best to sell them on the idea.

Our visitors can be classified into two types. One is the large builder, constructing twenty-five or more houses at one time, whose comment is, "We have been doing this for years." Most of our operations are things which he has done or tried. It is not reasonable to expect that he would secure a 10 per cent saving in labor whereas we have done somewhat better than 25 per cent. The other type of visitor is the man for whom this project was originally conceived, the small builder, and he still is not convinced. His reaction has been, "That's all right, but I don't have time to train my men to a different way of working." As long as this attitude holds true, there is little that the Industry-Engineered House or any other program can do to lower the cost of housing.

TIME COMPARISON BY OPERATIONS

Operation	HOURS F-1	F-2
Layout for Excavation	..	6.010
Excavation	13.395	6.724
Layout and Build Batter Boards	12.392	6.563
Layout and Trench Footings	10.128	9.945
Build Footing Forms	16.214	17.355
Pour Footings	14.223	12.995
Strip Forms	4.847	2.162
Dig Trench and Lay Sanitary Tile	11.012	11.449
Lay Footing Drain Tile	10.238	7.303
Place Sump	3.434	4.054
Spread Gravel for Basement	7.251	1.743
Build Foundation Wall	88.015	59.783
Waterproof Foundation Wall	3.772	6.206
Fill	1.828	4.403
Install Temporary Power	5.949	..
Lay Sill Plate	10.362	8.882
Lay Floor Joists	30.289	32.958
Lay Sub-Floor	22.192	21.340
Lay Sole Plate	20.537	13.868
Erect Studding and Top Plate	116.393	142.908
Fit and Nail Sheathing	49.241	47.953
Build and Erect Roof Trusses	78.927	82.097
Lay Roof Sheathing	57.817	53.798
Lay Weatherproofing	21.885	5.311
Install Windows and Doors	128.425	135.413
Build and Fit Cornice and Louvers	46.825	29.527
Fit Gutter	48.970	26.899
Lay Shingles	52.637	44.972
Prime Coat Painting	26.960	18.707
Lay Weatherboarding	142.233	132.055
Porch (Footing and Frame)	28.822	15.193
Install Exterior Water System	6.734	14.323
Build Chimney	19.924	24.328
Install Electric Wiring	40.097	44.315
Install Plumbing	105.449	35.686
Lay Basement and Sills	47.636	37.360
Paint, Finish	13.980	14.740
Install Wall board	336.508	211.645
Install Heating System	42.918	39.541
Preassemble Gable Ends	..	..
Paint, Interior	133.429	112.972
Build Stairway	27.802	17.841
Lay Flooring	63.673	51.683
Lay Linoleum	20.776	11.475
Install Cabinets	29.307	13.667
Install Shelving	9.243	7.185
Interior Trim	246.499	152.033
Unclassified Time	9.658	..
	2238.846	1757.370

ROOF TRUSSES RECOMMENDED FOR THE SMALL HOUSE*

DEFINITE savings in materials and labor requirements through the use of preassembled wood roof trusses make truss framing an effective means of cost reduction in small dwelling construction. In a 26 by 32 ft. dwelling, the use of trusses can result in a cost saving of approximately $70, and a reduction in use of lumber of almost 30 per cent, as compared to conventional rafter and joist construction. In addition to cost savings, roof trusses offer other advantages of increased flexibility for interior planning and added speed and efficiency in site erection procedures.

Developments in Trusses

During the last several years special efforts have been made to apply engineering design to small houses. One of the results has been the development of light wood roof trusses. Laboratory tests and extensive field experience have clearly demonstrated the suitability of such trusses for small dwellings.

The use of lightweight roof trusses was stimulated particularly during the war by the need to conserve lumber. Light trusses developed by the Federal Public Housing Authority and others were used in building thousands of houses and have provided very satisfactory service. The wartime trusses were varied in design. Some were intended for use with lightweight roofing and ceiling finish. Others were designed to accommodate heavy roofing and plastered ceilings. Varied types of trusses were tested before use, and performed satisfactorily in service.

Wartime requirements opened the way for use of trusses in many localities where they normally would not have been considered, and the extensive satisfactory experience with them has resulted in their continued use in the postwar period. Special attention is currently being given to their further development and application. For example, the Industry Engineered House program, sponsored by the Producers' Council and the National Retail Lumber Dealers Association, includes recommendations for use of simple lightweight wood roof trusses as a means of reducing costs in small house construction.†

Following up on war housing experience, the National Housing Agency sponsored tests on specially designed wood trusses developed by engineers of the Federal Public Housing Authority. The tests, conducted at the National Bureau of Standards in cooperation with the Federal Housing Administration, showed that these trusses were suitable for permanent construction throughout this country. They can be used with any standard type of roofing, including slate or tile, and can adequately support a ceiling of plaster on gypsum lath. A diagram of this type of truss is shown in Fig. 1.

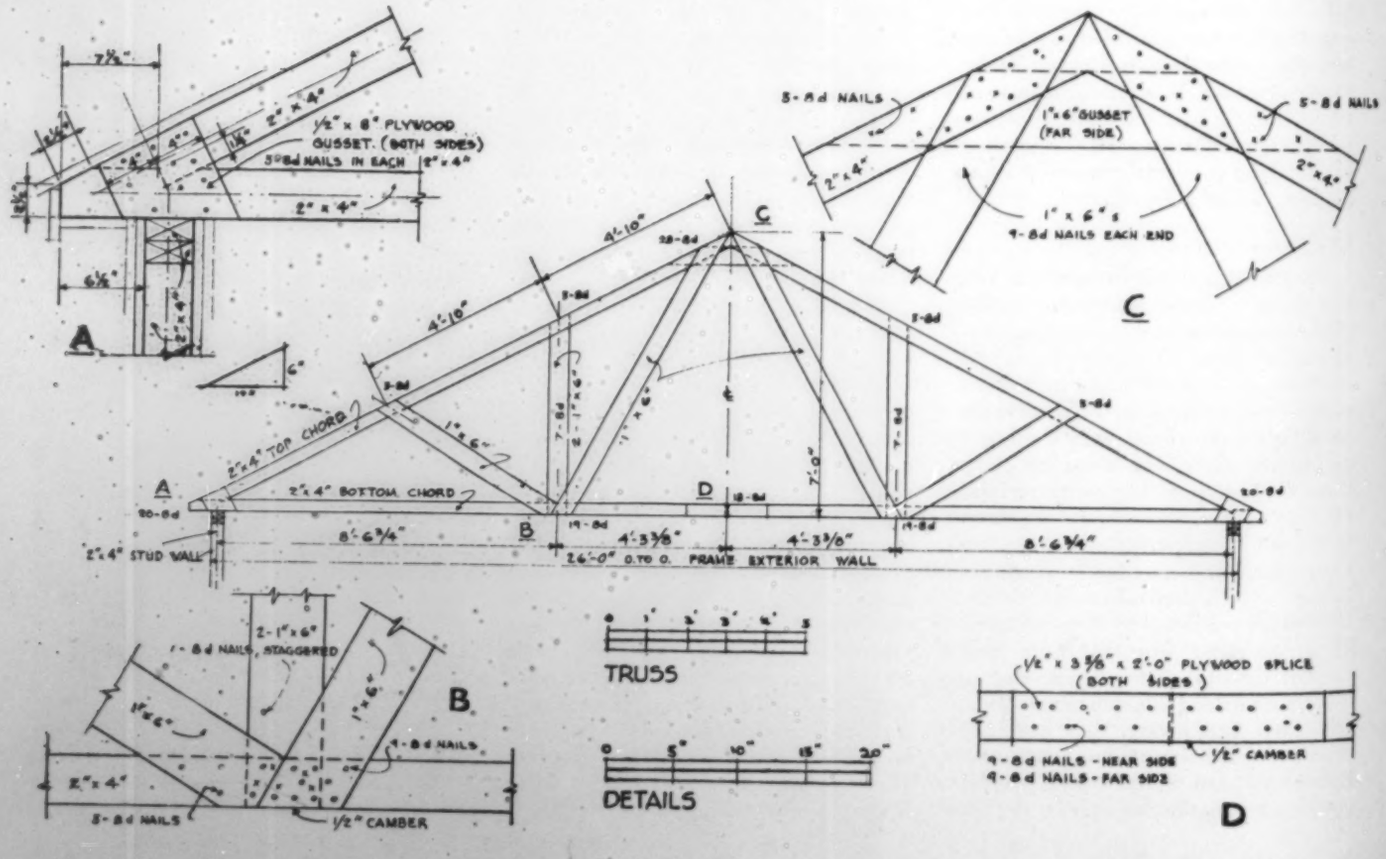
Analysis of Savings

A detailed analysis has been made of the effect of using wood roof trusses of the type shown in Fig. 1 for small house construction. The analysis shows substantial savings in cost in favor of trusses spaced 24 in. o.c. as compared to conventional rafter and ceiling framing spaced 16 in. o.c. In the case of a one-story house, 26 by 32 ft. outside dimensions, with a roof slope of 6 in. in 12 in., the saving in cost, based on current material prices and wage rates, is ap-

* Excerpts from a report, "Wood Roof Trusses for the Small House," by the Technical Staff, HHFA.

† See report of tests at University of Illinois, p. 141.

Fig. 1: *Details of the wood roof truss tested for the HHFA*



proximately $70. (See the table below).

The lower cost of truss construction is accounted for by reduced lumber and labor requirements. Not only may the framing lumber be smaller in dimension than in conventional framing, but trusses may also be spaced 24 in. o.c. as compared to the usual 16 in. spacing of rafter and joist construction. The following figures show percentage savings in the 26 by 32 ft. house:

Lumber Requirements for Trusses: 28.4 per cent less.

Labor Requirements for Trusses: 36.8 per cent less hours.

Total Cost of Trusses: 29.8 per cent less.

The analysis showed relatively little difference in costs between the 16 in. and 24 in. spacing of conventional framing. This was due not only to the larger sizes of lumber needed for the 24 in. spacing, but also the fact that framing spaced 24 in. o.c. requires solid blocking in back of all joints of dry board ceiling finish. Framing spaced 16 in. o.c. does not require this blocking.

The lumber used was No. 2 common short-leaf Southern Yellow Pine for both trusses and conventional framing. Dry board ceiling finish was also used in both cases.

Rafter and ceiling joist sizes were based on FHA "Tables of Maximum Allowable Spans" (May 1946). At 16 in. spacing, rafters were 2 by 8 in. and ceiling joists were 2 by 6 in. (If stress grades of lumber are used, both rafters and joists may be 2 by 6 in.).

All cutting of trusses and conventional framing was considered to be by power equipment, and man-hour requirements were estimated on that basis. A comparison of material quantities and costs for the two types of construction are given in the table.

The clear span of truss construction permits use of non-bearing partitions, so that it is possible to eliminate the extra top plate required for bearing partitions used with conventional framing. It also permits a smaller floor girder to be used for floor construction, since the floor does not have to support the bearing partition and help carry the roof load. These two reductions in materials result directly from use of truss and are included in the savings favoring truss construction indicated in the table. The table does not, however, reflect any of the other potential savings that may result from truss construction.

Special Advantages of Trusses

Roof trusses offer special advantages in helping to speed up site erection and overcome delays due to weather conditions. These advantages are reflected not only in improved construction methods but also in further reductions in costs.

With preassembled trusses a roof can be put over the job quickly to provide protection against the weather. This offers advantages in all seasons and particularly in cold weather building operations.

Because of the clear span afforded by trusses, fixed bearing partitions are not needed. This permits increased efficiency in laying floors and applying interior wall and ceiling finishes. Material can be brought in, applied and trimmed conveniently without the waste of time and materials caused by having to fit materials around partitions. The fact that non-bearing partitions may be used considerably increases the flexibility of interior planning to provide for family activities.

In the case of houses built with insulation above crawl spaces, the quick roofing-over, made possible by the use of trusses, provides protection for insulation under the rough flooring. Without covering, the insulation material may get wet and its value as insulation may be impaired.

The trusses can be easily made on jig tables on the site, or transported conveniently to the site ready for erection. They are relatively light in weight and can be readily set into place.

Test Results

The truss shown in Fig. 1 was one of three types tested at the National Bureau of Standards early in 1947. The trusses were designed by the Technical Division of Federal Public Housing Authority and tested in cooperation with Federal Housing Administration. All three were of the modified Fink type and were made following the same details except that the truss shown in Fig. 1 had an additional 1 by 6 in. board nailed to each vertical member.

These trusses were designed for use on 24 in. centers with plastered ceiling, 1 in. wood roof sheathing and slate or tile roof covering, using a design live load of 20 lb. p.s.f. on the roof surface. Top and bottom chords were of 2 by 4 in. members, web members were 1 by 6 in. with ample gussets at heels, apex and bottom chord splice. Upper chord slope was 6 in. in 12 in. for all trusses. No provision was made for attic storage space. Each truss was loaded vertically to destruction. Details of Truss No. 3 are shown in Fig. 1.

All trusses withstood assumed dead loads of 25 lb. p.s.f. plus at least 3½ times the assumed live load of 20 lb. p.s.f. on the roof. Truss No. 3 withstood a loading of 5.25 times the assumed live load.

Maximum deflection of bottom chords under estimated dead loads assuming slate roofs and plastered ceilings were .37 in., .49 in., and .45 in. Maximum deflections under a load representing once the assumed live load of 20 lb. p.s.f. of roof surface were .37 in., .54 in., and .47 in. Such deflections are well under the maximum allowable deflections for the span, and indicate that the trusses are satisfactory for use with plastered ceilings.

Special Notes and Problems

Laboratory tests and field experience show that properly designed roof trusses are definitely acceptable for dwelling construction. The type of truss shown in Fig. 1 is suitable for heavy roofing and plaster ceiling finish. Trusses lighter in weight than this type have also been used, and field experience with them has shown they are satisfactory for smaller spans, especially for use with light roofing and dry board ceiling finish materials. Such trusses provide additional savings in cost, which makes them particularly desirable for minimum cost houses where heavy roofing and plastered ceilings are not used.

In assembling wood trusses special care should be taken to achieve adequate nailing, since the strength of trusses is, to a large extent, dependent on the fastness of the connection between members. Care should also be exercised in selecting materials for trusses. Lumber equal in stress value to No. 2 dimension short-leaf Southern Pine is suitable; any lower quality is not recommended.

Comparative Quantities and Costs (with dry board ceiling finish)

		Truss at 24 in. Spacing		*Conventional at 16 in. Spacing*	
		Qty.	*Cost*	*Qty.*	*Cost*
Dimension lumber	B.F.	835 (a)	$ 71.33	1764	$155.52
Board lumber	B.F.	469 (b)	46.38	58	5.21
Nails	Lbs.	36	2.52	13	.91
Extra for thicker ceiling finish			3.26		None
Labor	Hrs.	24	47.68	38	79.70
Total material and labor			$171.17		$241.34

(a) Includes solid blocking back of all joints of dry board ceiling finish.

(b) Includes 57 sq. ft. of plywood for gussets figured as board feet.

Note: *If ceiling finish is plaster on gypsum lath (rather than dry wall finish), the solid blocking at joints may be eliminated since gypsum lath does not require the blocking needed at joints of dry wallboard finish at 24 in. spacing. This increases the saving for truss construction to approximately $95 over conventional framing at 16 in. spacing.*

PRODUCTS for Better Building

MODEL STORES

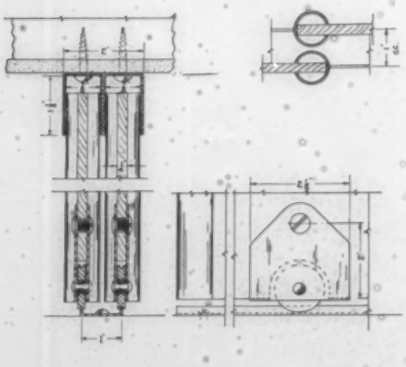
A touring *Store Modernization Caravan* initiated by Pittsburgh Plate Glass consists of 12 model retail establishments which will visit 540 major cities during the next three years.

The ⅛ scale models include a tavern, pharmacy, women's apparel store, jewelry store, food market, theater, restaurant, bakery, hardware store, shoe shop, floral shop and men's apparel shop.

Architectural staff of Pittsburgh Plate Glass, with Elmer A. Lundberg, director of architectural design in charge, originated the "open front" designs which permit passers-by to see the entire interior of the street floor.

Company representatives say inventories of plate glass, *Herculite* tempered all-glass doors and *Carrara* structural glasses should be in adequate supply for the first time since the war years.

The company will work closely with independent architects in filling orders resulting from the caravan trip. No working drawings will be made and all inquiries will be referred to existing architects and contractors. Pittsburgh Plate Glass Co., Pittsburgh, Pa.



Specially designed sheave for closet panel

WALL PANELS

Architects have shown enthusiasm for a new idea in sliding wall panels used as closet doors.

These inexpensively constructed panels are made of Masonite reinforced with open-seam steel tubing, as shown in the diagram.

Smooth operation of the panels is possible through use of a specially designed Oilite bearing sheave. These sheaves slide on a floor channel which permits adequate clearance between tubing on the panels. An overhead guide is

Inexpensive sliding panels of Masonite

mounted on the ceiling into which the steel tubing fits closely. Grant Pulley and Hardware Co., 33-36 57th St., Woodside, N. Y.

SOUNDPROOFING METAL

Soundproofing metal sheets designed for sound-deadening quality especially suited to service in telephone booths and similar applications are being manufactured by a process called *Rigidizing*. This method produces a clear-through geometric pattern in sheet or strip metals of any kind which displaces the plane of the metal in such a way as to produce uniform stiffness or rigidity in all directions. At the same time, both surfaces of the metal acquire a texture which is said to conceal scratches, minor dents and fingermarks.

Rigidity and lack of waviness in the sheets are claimed advantageous to fabricators because they eliminate the bulging and "paneling" so frequently present when covering large areas with ordinary flat rolled sheet. Rigid-Tex Corp., Buffalo, N. Y.

RECORD PLAYER

Completely revolutionary in the playing of recorded music for industries, clubs and homes, the *Select-O-Matic* is claimed by the Seeburg Corp., to accomplish the following:

1. Permits the instant choice of any one of 200 selections without touching a record or searching for the desired selection in an album.

2. Automatically plays more than 14 hours of continuous music without repeating a selection and without anyone's touching the mechanism or handling a record.

3. Plays either or both sides of a record without the recording being touched.

4. Removes the record from the library, places it on a vertical turntable, plays the record in a vertical position and then returns it to the library.

5. Plays programs that have been selected in advance on any predetermined time cycle by means of a program timer.

Model S-1 for industry can have components included for AM-FM radio programs, paging facilities and for programs to remote plants through the use of a dual-line amplifier which serves two telephone lines.

Record changer selects any of 200 sides

The basic record changer unit is available alone for establishments which already have amplifier facilities. Several arrangements are possible with the metal cabinet Model S-1 where various amplifier outputs are available and in which the radio and dual-line amplifier may be omitted and supplanted with a different amplifier.

A model styled in a cabinet of light wood is available for use in home recreation rooms, clubs, or similar applications and comes supplied with amplifier and speaker. J. P. Seeburg Corp., Chicago, Ill.

HEATING UNIT TESTS

Problems which have confronted architects and engineers since the inception of winter air conditioning with circulating warm air are now being solved in the laboratory.

Engineers of Jackson and Church Co., are completing a long series of tests which will determine the exact pressure drop through their heating units with and without filters. This information combined with fan characteristic data will give the designer of heating or drying plants accurate data on pressures for

(*Continued on page 176*)

MANUFACTURERS' LITERATURE

WIRING DIAGRAMS

Wiring for Industry Engineered Houses (B-3979). Wiring diagrams and kitchen layouts for both the L-shaped and the two-story house. Gives specifications and dimensions for refrigerators, ranges, water heaters, sinks and cabinets. 12 pp., illus. Better Homes Bureau, Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.*

MASONRY CONSTRUCTION

Brick Engineered Homes. Contains floor plans and elevations for six newly-designed homes of masonry construction. 24 pp., illus. Structural Clay Products Institute, 1756 K St., N. W., Washington, D. C. *25 cents.**

RADIANT HEATING

Capture the Sun with Hydro-Flo Heating. Diagrams and illustrations of radiant heating systems with discussion of radiator, convector, baseboard and radiant panel systems. 18 pp., illus. Bell & Gossett Co., Morton Grove, Ill.*

GARBAGE DISPOSER

Wonderaid Garbage Disposer. Specifications, description of working parts and operating instructions for Wonderaid disposer. 4 pp., illus. Wonderaid Products Co., Burbank, Calif.

SLIDING DOORS

Kennatrack. Details of single and double sliding door tracks, sliding door cabinet latches and door locks. Sketches are included for typical installations together with description of factory-built sliding door units. 16 pp., illus. Jay G. McKenna, Inc., Elkhart, Indiana.

PENCIL GUIDE

Eberhard Faber Color Systems in Business. Guide devoted to use of colored pencils in industry and business. 24 colors for many uses including architecture, engineering, and building. Eberhard Faber Pencil Co., 37 Greenpoint Ave., Brooklyn 22, N. Y.

ADHESIVES

How to Use and Prepare Glues, Pastes and Gums. Description of methods for storing and handling many types of adhesives plus discussion of preparation. National Adhesives, 270 Madison Ave., New York 16, N. Y.

*Other product information in Sweet's File, 1948.

MOULDINGS

Mira-Trim Mouldings, Design and Application. Catalog with description of 350 mouldings, accessories and installation instructions. 48 pp., illus., S & W Moulding Co., 990 Parsons Ave., Columbus 6, Ohio.

WIRE AND CABLE

Wire and Cable Catalog. Listings of General Electric thermoplastic, braided and leaded building wires, BX cable, Braid X and PVX cables as well as Flamenol, neoprene, rubber and braided cords. Also included are additions to the line, Type C cord and shot firing cord. National Code requirements and NEC tables are included. 48 pp., illus. General Electric Appliance & Merchandise Dept., Bridgeport 2, Conn.*

CONCRETE ARCH DAMS

Modern Developments in Reinforced Concrete (No. 21). Mathematical discussion of arch dams with arches of variable thickness. Includes load analyses and design curves. 24 pp., illus. Structural Bureau, Portland Cement Assn., 33 W. Grand Ave., Chicago 10, Ill.*

ELECTRICAL ACCESSORIES

Electric Wiring Devices. Catalog containing description and specifications for fluorescent lamp holders and starter sockets, incandescent receptacles and sockets, swivel units, terminal strips and display sign specialties. 36 pp., illus. Kulka Electric Mfg. Co., Inc., Mt. Vernon, N. Y.

DOOR FRAMES

Aetna Steel Door Frames for Modern Homes. Describes finish, assembly, hardware and sizes of Aetna door frames. Includes installation details and specifications. 12 pp., illus. Aetna Steel Products Corp., 61 Broadway, New York 6, N. Y.*

COPPER FOR DECORATION

Maintenance, Cleaning, Finishing and Coloring of Copper, Brass, and Bronze. Besides advice on maintenance of copper and copper-base alloys, processes for coloring and finishing are detailed and colors available are illustrated 30 pp., illus. Copper & Brass Research Assn., 420 Lexington Ave., New York 17, N. Y.

PLASTIC PANELING

Marlite Plastic Finished Wall and Ceiling Panels. General catalog containing uses, specifications and colors of plastic finished panels as well as installation instructions. Information and specifications on Marsh Mouldings and bathroom accessories. 8 pp., illus. Marsh Wall Products, Inc., Dover, Ohio.*

MOTOR STARTER

Hi-fuse Control. Booklet showing construction, operation and application of combination starter for high-voltage induction and synchronous motors for industry. 8 pp., illus. Electric Machinery Mfg. Co., Minneapolis 13, Minn.

STEEL FRAMING

Stran Steel. Description of steel framework for houses, multiple unit dwellings and commercial dwellings. Covers erection methods, specifications, engineering data, construction details, accessories and typical examples. 24 pp., illus. Great Lakes Steel Corp., Stran-Steel Div., Penobscot Bldg., Detroit 26, Mich.*

PUMPS

Easy Flow Speed Prime Pumps (Bulletin No. 47-12). Description of new line in Rex Easy Flow pumps with specifications and application information. 12 pp., illus. Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis.

STEEL CASEMENTS

Better Windows at Lower Cost. Catalog describing Fenestra Residence Steel Casements and application to Industry-Engineered Houses with floor plans and perspectives. 8 pp., illus. Detroit Steel Products Co., 2250 E. Grand Boulevard, Detroit 11, Mich.*

WATER SOFTENER

Cochrane Rapid Reactors (Publ. 4425). Describes cold process water softener for industrial uses. Also included are chemical proportioners, filters and other auxiliary equipment. 12 pp., illus. Cochrane Corp., 17th St., & Allegheny Ave., Philadelphia 32, Pa.

ROOFING AND SIDING

Plasteel Roofing and Siding. Handbook of building coverage containing engineering details, estimating tables for installation of steel-asphalt plasteel sheets. 28 pp., illus. Plasteel Products Co., Washington, Pa.

Specifications for Carey Built-up Roofs. Drawings and material specifications for both hot and cold process built-up roofs. Detailed information on surface preparation and application. 28 pp., illus. Philip Carey Mfg. Co., Dept. 803, Cincinnati, Ohio.*

(*Continued on page 188*)

UNIFORM PLUMBING CODE FOR HOUSING

Sponsored by Housing and Home Finance Agency

CULMINATING 25 years of research and investigation the new *Uniform Plumbing Code for Housing* sponsored by the Housing and Home Finance Agency proposes a set of standards which if applied and adopted could result in these benefits:

1. Simplified, uniform installations.
2. Standard designs and fittings.
3. Economy in use of pipe.
4. Better sanitary safety.

Code Background

Efforts toward formulating a uniform plumbing code started when the Department of Commerce Building Code Committee issued *Recommended Minimum Requirements for Plumbing* (BH 13) in 1923.

A subcommittee of the Central Housing Committee prepared a plumbing manual in 1940 (*Building Materials and Structures Report BMS 66*) which served as a guide for agencies doing plumbing work or approving plumbing plans. (See ARCHITECTURAL RECORD, Nov. 1941.

Added progress toward a uniform plumbing code came in 1941 when *Emergency Plumbing Standards* were developed by representatives of Master Plumbers and labor organizations together with representatives of federal agencies to conserve critical materials.

As the *Emergency Plumbing Standards* were mandatory during the war and were observed throughout the country, they proved to many municipalities not only that their own plumbing codes were either antiquated or extravagant, but also that a nationwide plumbing code is feasible and could result in better sanitation at lower cost. For these reasons the government's long-time efforts to launch a uniform plumbing code were encouraged.

National Housing Agency in 1946 sponsored a plumbing test project at the National Bureau of Standards and the formation of the Uniform Plumbing Code Committee which would: (1) engage in careful research into the nation's plumbing needs; (2) study and analyze existing practices and materials; and (3) on these findings make recommendations and draft a peacetime plumbing code suitable for nationwide adoption.

This committee, with Vincent T. Manas, chairman, is composed of members representing the Housing and Home Finance Agency, National Association of Master Plumbers, The United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada (A.F.L.), National Bureau of Standards, and the United States Public Health Service.

National Bureau of Standards, directed by the Uniform Plumbing Code Committee, conducted an investigation of certain aspects of flow in housing drainage systems. One phase of this work was done using transparent piping so that the flow phenomena could be observed and photographed. Motion pictures were taken of pertinent phenomena so that the results could be more easily visualized and studied by the plumbing industry and officials or individuals connected with code formulation.

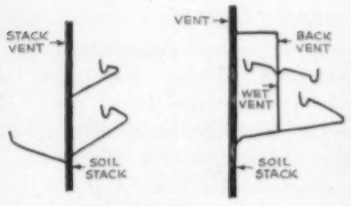
Tests and Results

The test setup at the National Bureau of Standards represented complete and accurate reproduction of some of the characteristic plumbing systems used in housing. It included complete systems ordinarily found in a small home with one bathroom, kitchen, and basement and in a two-story duplex house with bathrooms back to back on the first floor. This arrangement provided three systems for studying the major problems on which data were needed.

The first system provided the means for investigation of self-siphonage problems of plumbing fixture traps. The results of tests on this system gave information for the determination of the safe distance that a fixture could be extended without a vent.

The second system permitted the investigation of stack vented fixtures. This type of installation permits the grouping of the kitchen sink and bathroom lavatory, water closet, and bathtub or shower directly into the soil stack without individual back vents; it is the most economical for a one- or two-story residence.

The third system permitted the investigation of the merits of wet vented fixtures whereby one pipe



(See details on page 155)

serves the dual purpose of removing the waste water from a fixture and venting another fixture.

Some tests were performed not only with smooth, transparent pipe and fittings, but with standard materials because code requirements must be based on the use of standard pipe and fittings commonly used in a drainage system. On all tests 3-in. soil stacks were used.

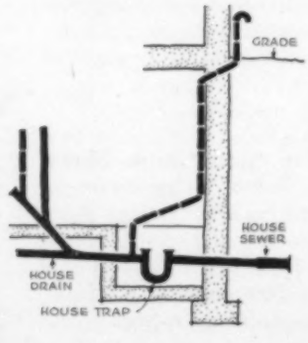
The *Uniform Plumbing Code for Housing* (presented as Technical Paper No. 6 of the Technical Staff of Housing and Home Finance Agency, Leonard G. Haeger, director) includes the results of these tests as analyzed by the Uniform Plumbing code Committee. The requirements of the code are also based on the results of earlier research and on the practical experience of members of the Committee.

Principles provided for in the *Uniform Plumbing Code* will effect proportionate saving for either a small or large residence in design and installation. For instance, the roughing in for a complete bathroom may be enclosed in the space provided by a 2-by-4 if 3 in. copper tubing is used for the stack.

The use of house traps and fresh air has been definitely proven as not adding to sanitary safety. This in-

(*Continued on page 153*)

House traps not advisable



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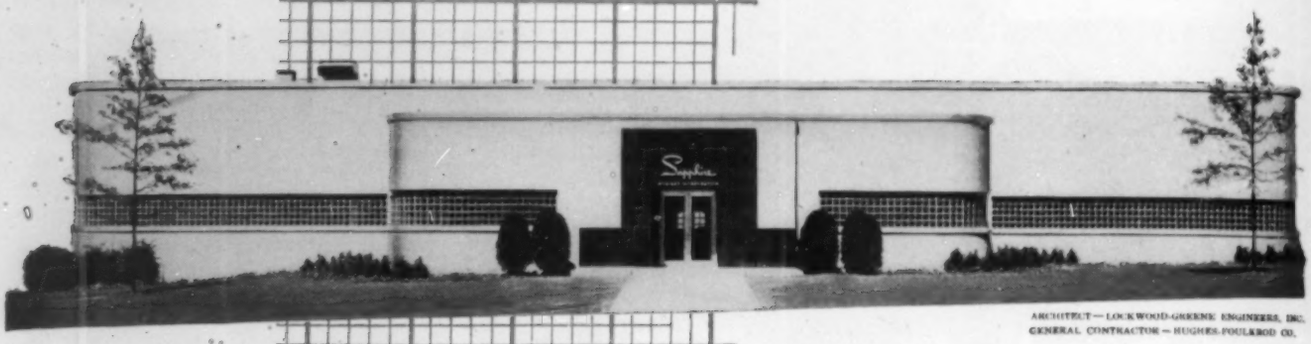

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GENERAL CONTRACTOR — HUGHES-FOULROD CO.

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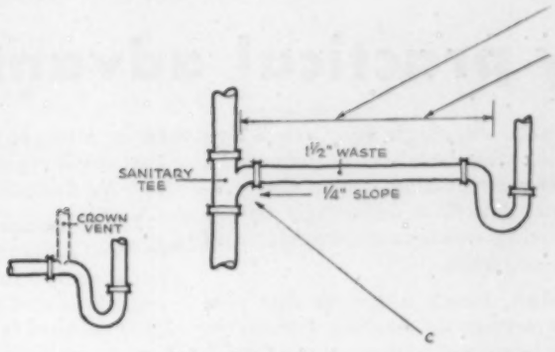
UNIFORM PLUMBING CODE FOR HOUSING

(Continued from page 150)

Sponsored by Housing and Home Finance Agency

(Continued on page 155)

FIXTURE WASTE LENGTH



The distance from trap to vent of present codes in U. S. varies from 18 in. to as much as 12 ft.

Uniform Plumbing Code, based on tests at the National Bureau of Standards, has set this length under conditions shown at a maximum of 4 ft. 6 in. If ½ in. slope is provided for the waste the maximum distance is reduced to 3 ft. 0 in. (See table for other sizes)

Since the code requires 6 in. minimum from trap to vent, crown venting is not allowed

Where a long turn tee-Y is used instead of a sanitary tee, the maximum permissible distance for 1½ in. diameter waste at ¼ in. slope is 4 ft. 0 in. If the slope is increased to ½ in. per ft., the length of unvented waste is reduced to 2 ft. 0 in. (See table)

Full "S" traps are not permitted. Anti-siphon traps are not recognized as such

DISTANCE OF TRAP FROM VENT

Size of Fixture Drain, inches	Permissible length, feet			
	Sanitary Tee		Longturn TY or Combination Y and ⅛ Bend	
	¼" slope	½" slope	¼" slope	½" slope
1¼	4'–0"	2'–6"	1'–6"	1'–0"
1½	4'–6"	3'–0"	4'–0"	2'–0"
2	5'–0"	4'–6"	4'–6"	4'–6"
3	6'–0"	6'–0"	6'–0"	6'–0"
4	8'–0"	8'–0"	8'–0"	8'–0"

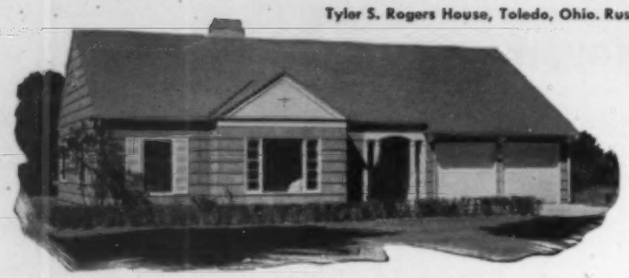
stallation creates greater resistance to flow and prevents the venting of the main sewer through the roof outlets of the building.

Further research and study remains to be done on loading of building drains, soil stacks and branches; loop and circuit venting; flow rate of plumbing fixtures; and ratification of present empirical values provided in most codes as they pertain to loading of the plumbing system.

Although the *Uniform Plumbing Code* applies to housing, many of the principles involved and many of the standards recommended are applicable to all classes of plumbing installations; they provide a foundation for investigation extended to all types of structures. The *Uniform Plumbing Code for Housing*, meanwhile, provides the basis for many communities to consider review of their present codes in an effort to encourage more and better housing at lower costs through (1) simplified, uniform installations with standard designs and fittings and through (2) reduction in the space needed to accommodate plumbing pipes and fixtures.

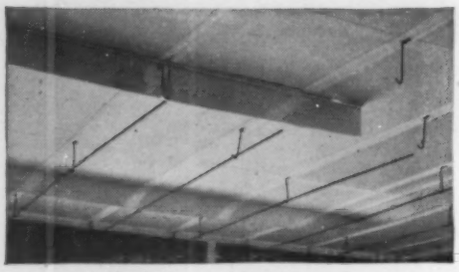
ceiling installation of warm air

Tyler S. Rogers House, Toledo, Ohio. Russell B. Johns, Builder.



Radiant Panel Heating

provides many practical advantages



Hooks are attached to the true ceiling-joists to carry cross ties for metal lath. Notched sheet-metal baffles are also hung from the hooks to control direction of warm air flow with the hung ceiling.

Metal lath in position, before application of scratch and finish coats of plaster.

Attic view shows insulated supply ducts that connect via warm-air inlet boots to the ceiling panels below. Sealed insulation board is used to form top of ceiling plenum. Uninsulated pipe at right is exhaust for kitchen ventilating, not connected with heating system. Photograph taken before insulation was installed between joists.

FOR new, single floor, ranch type houses, here's a radiant panel warm air heating system that provides *practical advantages* to the heating contractor, builder and home buyer.

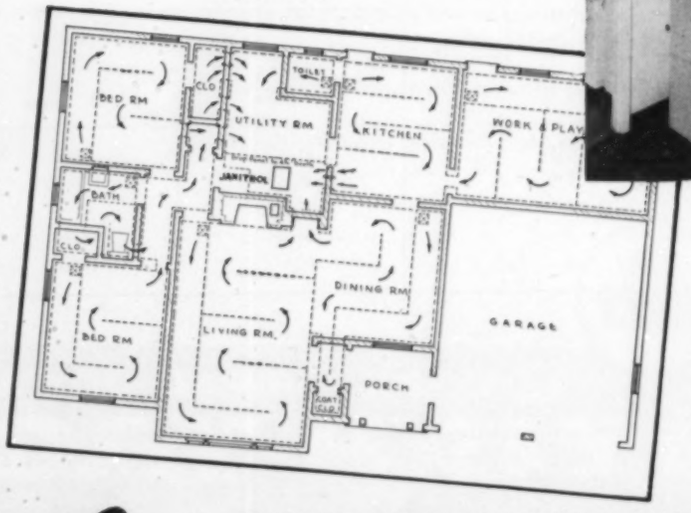
And, here's a system that puts the warm air heating contractor "in business" with a *practical application* of highly publicized radiant heating.

Use of circulated warm air provides quick and automatic response to outdoor temperature changes. Using the *entire ceiling* as the radiant panel, assures even and constant heat distribution that is also remarkably flexible. Important to the contractor, builder and home buyer alike, is that there is *nothing that might require* future service *inside the heat distribution system.*

It will be seen that this practical form of radiant panel heating must be designed into the home building plans and that the proper use of insulation is important.

The proved results of this Panel-aire System using a Janitrol Gas-Fired Winter Air Conditioner, make it worth your while to study its application to the types of houses your customers and prospects are building. Write us for a copy of the Installation Code Manual 7-R published by National Warm Air Heating & Air Conditioning Assn. Enclose 30¢ to cover costs.

Compact and neat, Janitrol 120,000 Btu/hr. Gas-Fired Winter Air Conditioner, requires less than 30" x 30" floor space in the utility room.



The dotted lines on the floor plan show the scheme of baffles built within the hung ceiling. Arrows indicate direction of air flow over room areas and into the outlets, which return the air to the Janitrol unit for reheating and recirculation.

Janitrol

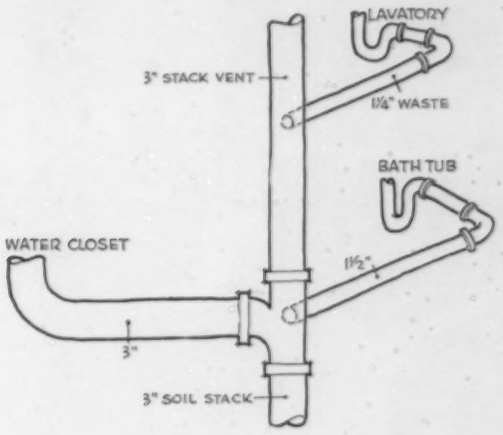
SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO

UNIFORM PLUMBING CODE FOR HOUSING

Sponsored by Housing and Home Finance Agency

(Continued from page 153)

STACK VENTING



Maximum length of unvented water closet branch: 6 ft. 0 in. at either ¼ in. or ½ in. slope (See table)

Maximum length of unvented lavatory waste: 4 ft. 0 in. at ¼ in. slope; 2 ft. 6 in. at ½ in. slope (See table page 153 for other sizes)

Maximum length of unvented bathtub waste: 4 ft. 6 in. at ¼ in. slope; 3 ft. 0 in. at ½ in. slope (See table)

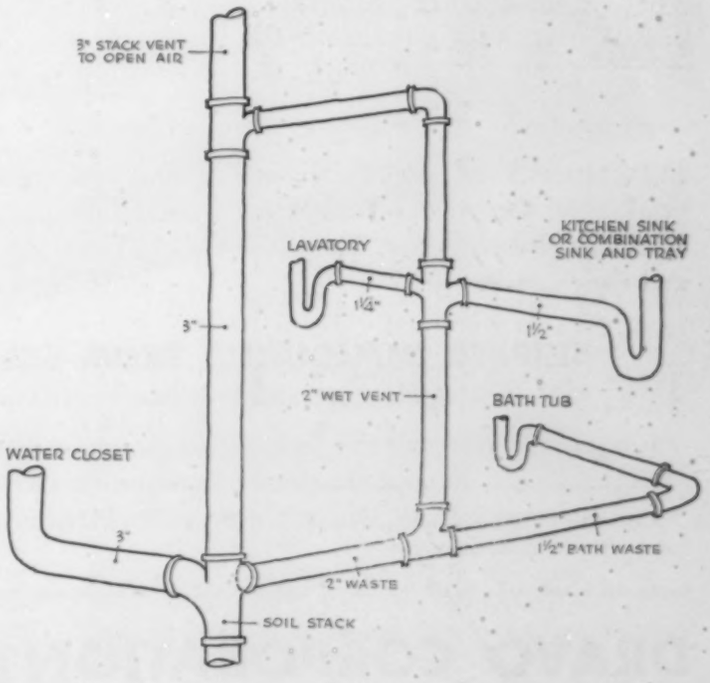
Fixtures are grouped around the stack with no individual vents needed

Materials allowed for drainage: galvanized steel pipe, galvanized wrought iron pipe, cast iron soil pipe, copper tubing (type "M") and lead pipe.

Stack venting is limited to one-story buildings or to the topmost branch interval of a building. Where the water closet and bathtub (or shower) wastes enter the stack at the same level, the system is adequately vented if the fixtures are installed within the limits of the table on page 153. No more than four fixtures can be stack vented above the stack vented water closet and bathtub (or shower)

WET VENTING

The waste pipe from lavatories, kitchen sinks or combination fixture may be used as a wet vent for bathtub or shower trap "provided that the wet vent connects with the waste in a vertical plane or not more than 6 in. therefrom;" and that not more than one fixture is drained into a 1½ in. wet vent or not more than four fixtures into a 2 in. wet vent. All fixtures must be installed within the limits of the table on page 153.



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THE RECORD REPORTS

. *Continued from page 20)*

dous building program. "In the spring of 1947," it comments, "colleges reported assurance of only enough funds to construct 26 per cent of the building space they needed, and this assurance included commitments of the federal government to provide temporary buildings from war surplus structures."

N.C.H. INACTIVATED

The National Committee on Housing assumed an inactive status on May 1. In a letter to the membership announcing this move, it was explained that although the need for the Committee's non-partisan activities in the housing and community development fields is greater than ever because of the persisting emergency, it had proved increasingly difficult to finance an adequate program. The studies and reports published by the Committee will be distributed by the National Planning Association, 800 21st St., N.W., Washington, D. C. The Committee was organized in 1941 to deal with defense and war housing needs.

KAHN FIRM REPORTS ON ACTIVITY

More than 20 million sq. ft. of new floor space have been added to America's production plant since VJ Day through the offices of Albert Kahn Associated Architects and Engineers, Inc., of Detroit, according to George H. Miehls, head of the firm.

While not identifying specific buildings, Mr. Miehls listed eight automobile assembly plants, five prime automotive manufacturing layouts, automotive administration buildings, a ball bearing plant said to be the world's largest, two publishing plants, linoleum plant and clothing factory as some of the structures designed by the Kahn organization since VJ Day.

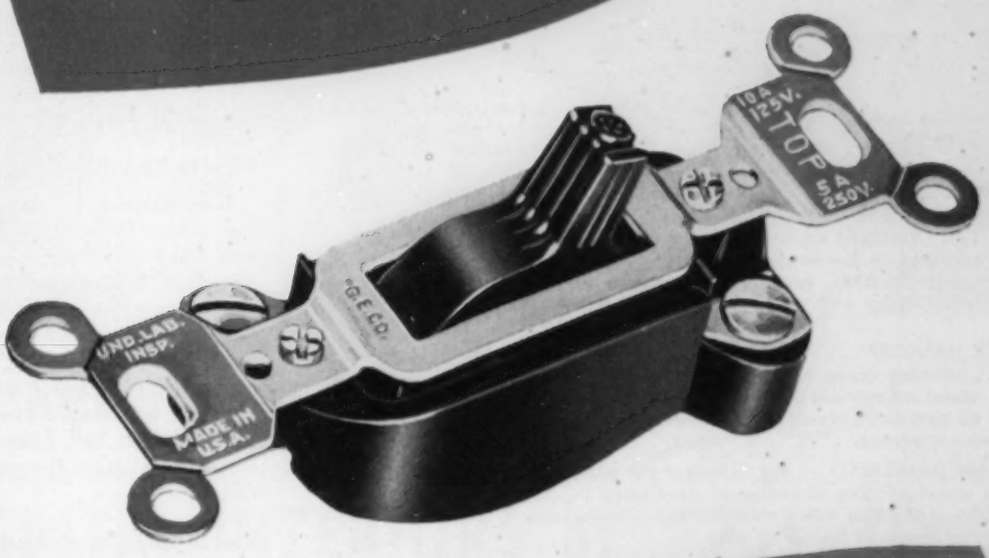
FACT CAMPAIGN STARTED

The drive to get construction facts-of-life across to the general public has been put into high gear. Initial distribution of pamphlets, speeches, press releases, and other material has been started by the Construction Industry Information Committee, which reports encouraging reception by the industry.

First economic study released by the Committee was "Who Can Afford Our New Housing?" Prepared by Miles Colean, the booklet emphasizes the industry's current record-smashing housing volume and the success with which the demand for houses in varying price ranges has been met.

(*Continued on page 158*)

A NEW *Silent* SWITCH



NOW RATED 10 amperes for today's heavy loads

Sure, selling a top-quality wiring job is a tough deal when clients can't tell an ampere from an ohm. But here's a brand-new focal point for your "better wiring" specifications – silence and smooth action – *features that can be demonstrated!*

With its new 10-ampere, 125 volts, T-rating, this new mercury switch opens up new fields for silent switch applications, matches quiet operation to today's heavy loads. It's a long-life, specification-grade switch, made well to do its job well – *another G-E first* – to help make good wiring better.

And, when you're specifying high-quality wiring, remember the power of the General Electric name. It identifies a complete line of wiring devices which your clients know they can trust. Ask your General Electric merchandise distributor about the new mercury switch and the rest of this complete line. Section D2-55, General Electric Company, Bridgeport 2, Connecticut.

GENERAL ELECTRIC

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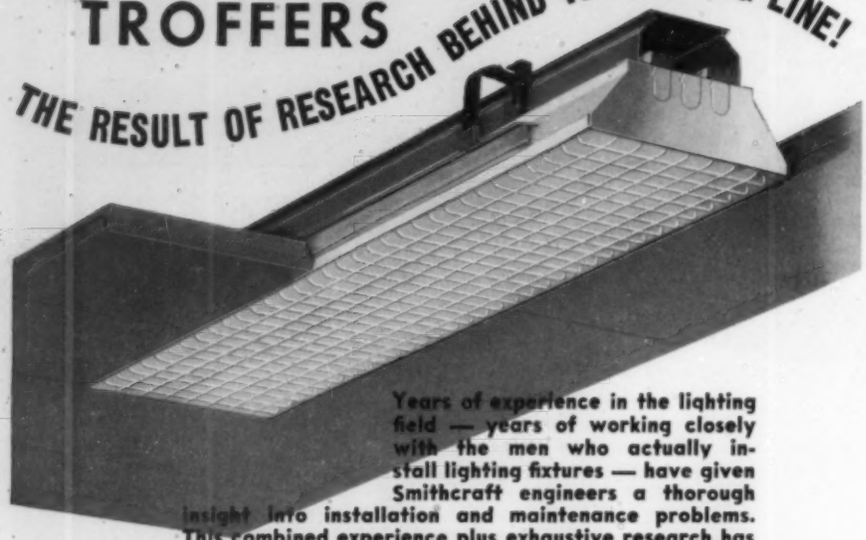

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REFLECTORS . . . fasten into position without loose parts . . . top reflector removable *at any time* for access to ballasts and wiring.

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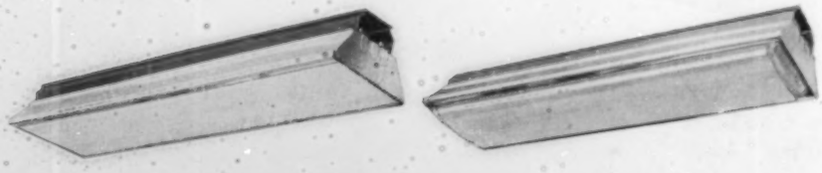
For ease of installation and maintenance, for beauty of appearance, there is no equal to the Smithcraft Troffer.

*pat. pend.



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THE RECORD REPORTS

(*Continued from page 156*)

In 1947, the study states, "homes were built almost in exact proportion for families in all income groups, except those with incomes of less than $1000, and those in the *highest* income brackets. *Instead of building entirely for the upper income groups, private enterprise has built homes within the reach of at least 75 per cent of the nation's families.* Moreover, the figures reveal that the family of average income was able to afford the average price of homes built in 1947, without overreaching itself."

WITH THE A.I.A.

How to Stabilize Construction

Demolition and replacement of buildings which have outlived their usefulness have been recommended by the American Institute of Architects as a step towards permanent stabilization of the construction industry. The recommendation is contained in a report of the Institute's Committee on Urban Planning, and will be submitted to the annual convention at Salt Lake City in June, for final action by the general membership.

Would Keep Examinations

The Bronx Chapter, A.I.A., has put itself on record against a bill before the State Legislature to waive all educational and examination requirements for the practice of architecture for veterans of World War II.

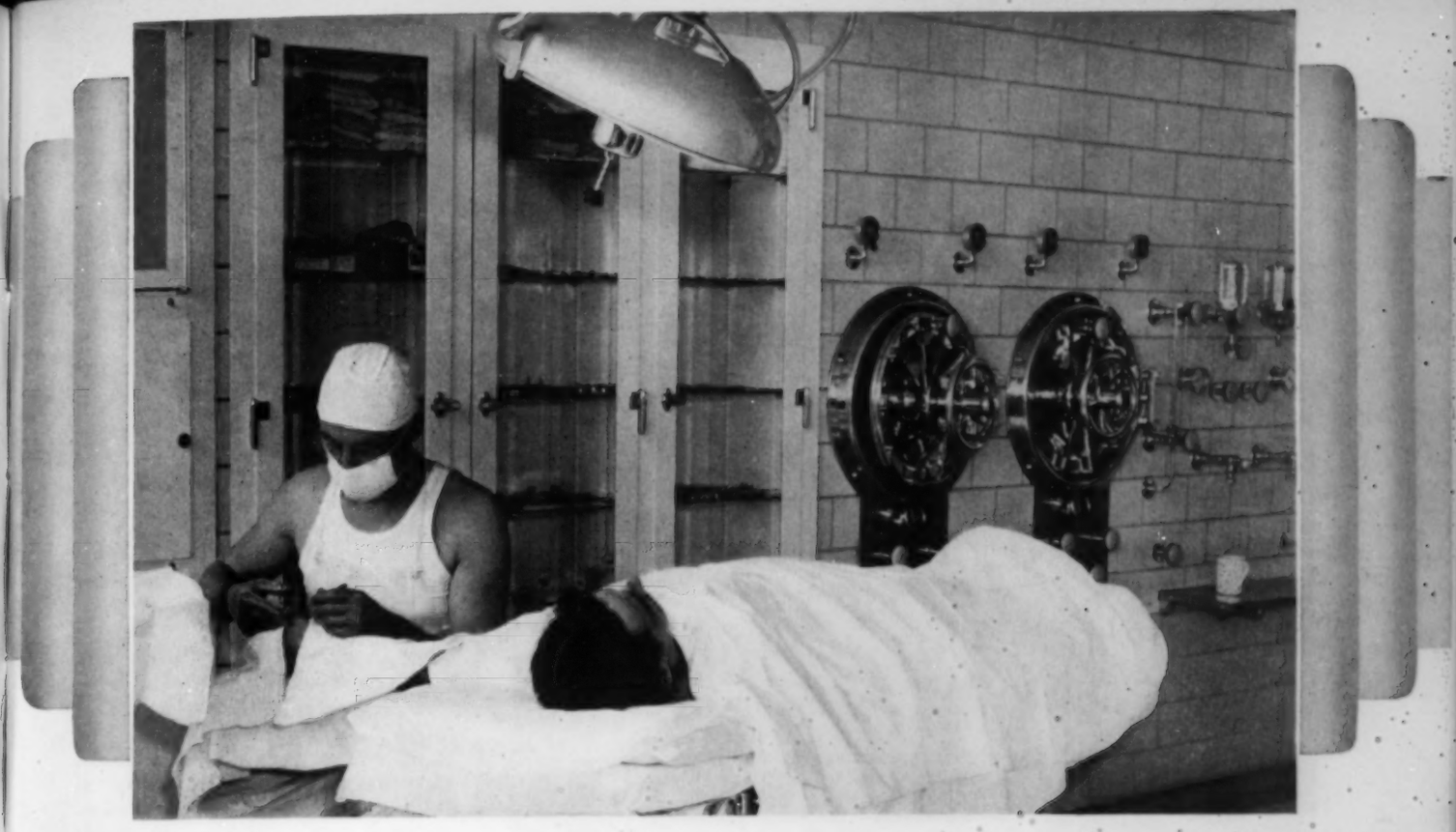
The resolution pointed out that service in the armed forces, while recognition should be taken of it in the granting of a license, is hardly satisfactory experience to replace the intensive schooling and practical experience required for the design and construction of buildings. It also condemned the bill for waiving the requirements for examination to determine a veteran's qualifications, warning that passage of the bill would endanger the public and be an entering wedge to reduce the high standards for the practice of other professions as well.

Harrison Honored

Wallace K. Harrison, Director of Planning for the United Nations Headquarters Commission, was awarded the Medal of Honor for distinguished architectural work and the highest professional standing, by the New York Chapter, A.I.A., at the Institute's 79th Anniversary Dinner late in February.

Another award was a Certificate of Merit, presented to the chapter for the work of its Paraplegic Committee in the design of standard details for houses for

(*Continued on page 160*)



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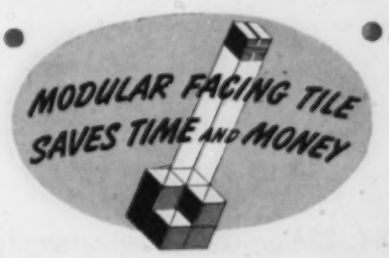
Charleston Clay Products Co., Charleston 22, West Virginia

Hanley Company, New York 17, N. Y.

Hydraulic Press Brick Co., Indianapolis, Indiana



Mapleton Clay Products Co., Canton, Ohio

INSTITUTE MEMBERS

Metropolitan Paving Brick Co., Canton, Ohio

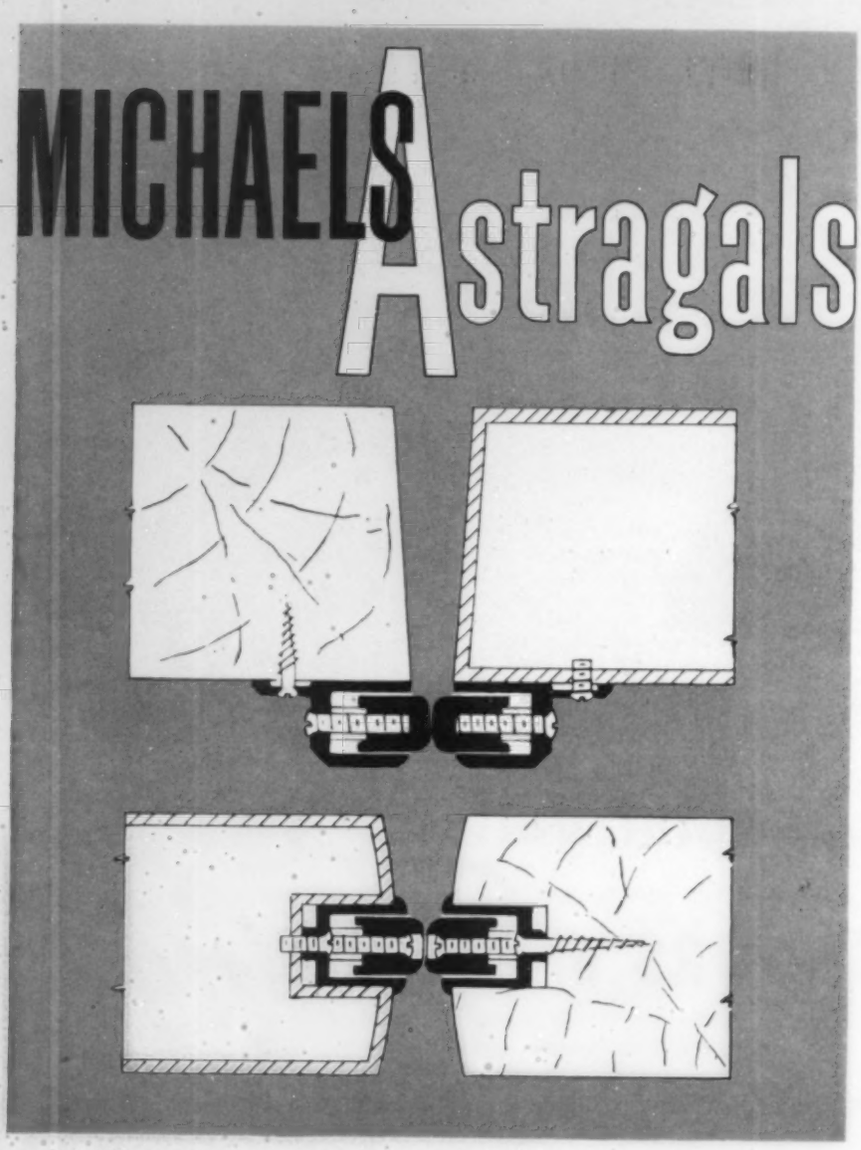
National Fireproofing Corp., Pittsburgh 12, Pennsylvania

Stark Brick Company, Canton, Ohio

Standard Clay Manufacturing Co., New Brighton, Pa.

West Virginia Brick Company, Charleston, West Virginia

MICHAELS Astragals



Write today for information and prices on Michaels Adjustable Astragals. Made of extruded bronze, aluminum or nickel, they are simple, practical, rugged, easily installed and adjusted, and available in several styles. Two are shown above. Type A (top illustration) may be applied to either wood or hollow metal bevel doors. Also used as a stop bead. Type E (lower illustration) is for bullnose hollow metal or wood double doors. Both types may be used at the bottom of doors. Michaels Astragals help keep doors closed tightly . . . eliminate drafts and air currents . . . keep out dirt and dust. Write for details. Astragals are only one of many items in the Michaels line. So whatever building product you need, if it's made of metal, we may have it or can make it.

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Bank Screens and Partitions
Welded Bronze Doors
Elevator Doors
Store Fronts
Lettering
Check Desks (standing and wall)
Lamp Standards
Marquises
Tablets and Signs
Name Plates
Astragals (adjustable)
Stair Railings (cast and wrought)
Wrought and Cast Radiator Grilles
Grilles and Wickets
Kick and Push Plates
Push Bars
Cast Thresholds
Extruded Thresholds
MI-CO Parking Meters
Museum Trophy Cases

The MICHAELS ART BRONZE COMPANY, 234 Scott St., Covington, Ky.

Member of the National Association of Ornamental Nonferrous Metals Manufacturers

THE RECORD REPORTS

(*Continued from page 158*)

the paraplegic veteran. The details were incorporated in specially designed houses, and the designs are to be distributed throughout the world by the Red Cross.

EDUCATORS MEET

Educators from 10 architectural schools met at Yale University on March 6 in the first regional gathering of the North Atlantic Seaboard Group of the Association of Collegiate Schools of Architecture. Highlight of the session was a discussion of "The Relationship of Instruction in Engineering and Construction to Design."

Participating in the conference were representatives of Harvard, Massachusetts Institute of Technology, Yale, Columbia, Princeton, and University of Pennsylvania schools of architecture, and non-ACSA member schools at Cooper Union, Pratt Institute, University of New Hampshire, and the Rhode Island School of Design.

Speakers included Charles H. Sawyer and Harold D. Hauf of Yale; Sherley W. Morgan of Princeton; Dean Peabody of Harvard; Lawrence Anderson and Ernest Gelotte of M.I.T.

AT THE COLLEGES

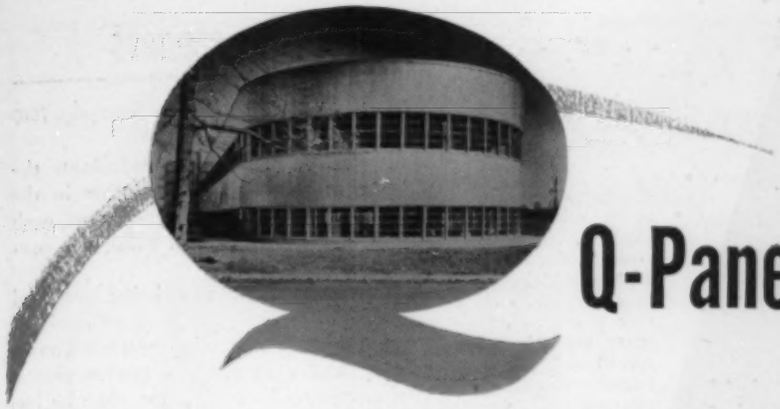
Objectives Are Studied

The American Institute of Architects and two associated organizations are engaged in the preparation of a comprehensive statement of the objectives of architectural education in American colleges and universities in order to develop plans to meet the needs of tomorrow. Collaborating with the A.I.A. Committee on Education in the project are representatives of the National Architectural Accrediting Board and the National Council of Architectural Registration Boards.

"The scope of architectural practice is being broadened to such an extent that we feel our educational procedures must be examined," explains Professor B. Kenneth Johnstone, of the Carnegie Institute of Technology, who is chairman of the A.I.A. committee. "The architect of tomorrow will face a task far more complicated and involved than any of his predecessors. The great scientific advances will influence new construction to such an extent that great technical skill will be required to construct and equip the building of tomorrow.

"No one person will be able to know personally, in detail, the various phases and technicalities of these future complex buildings. For that reason it will

(*Continued on page 162*)



Q-Panels available now

AND LOOK WHAT ARCHITECTS ARE DOING WITH THEM!

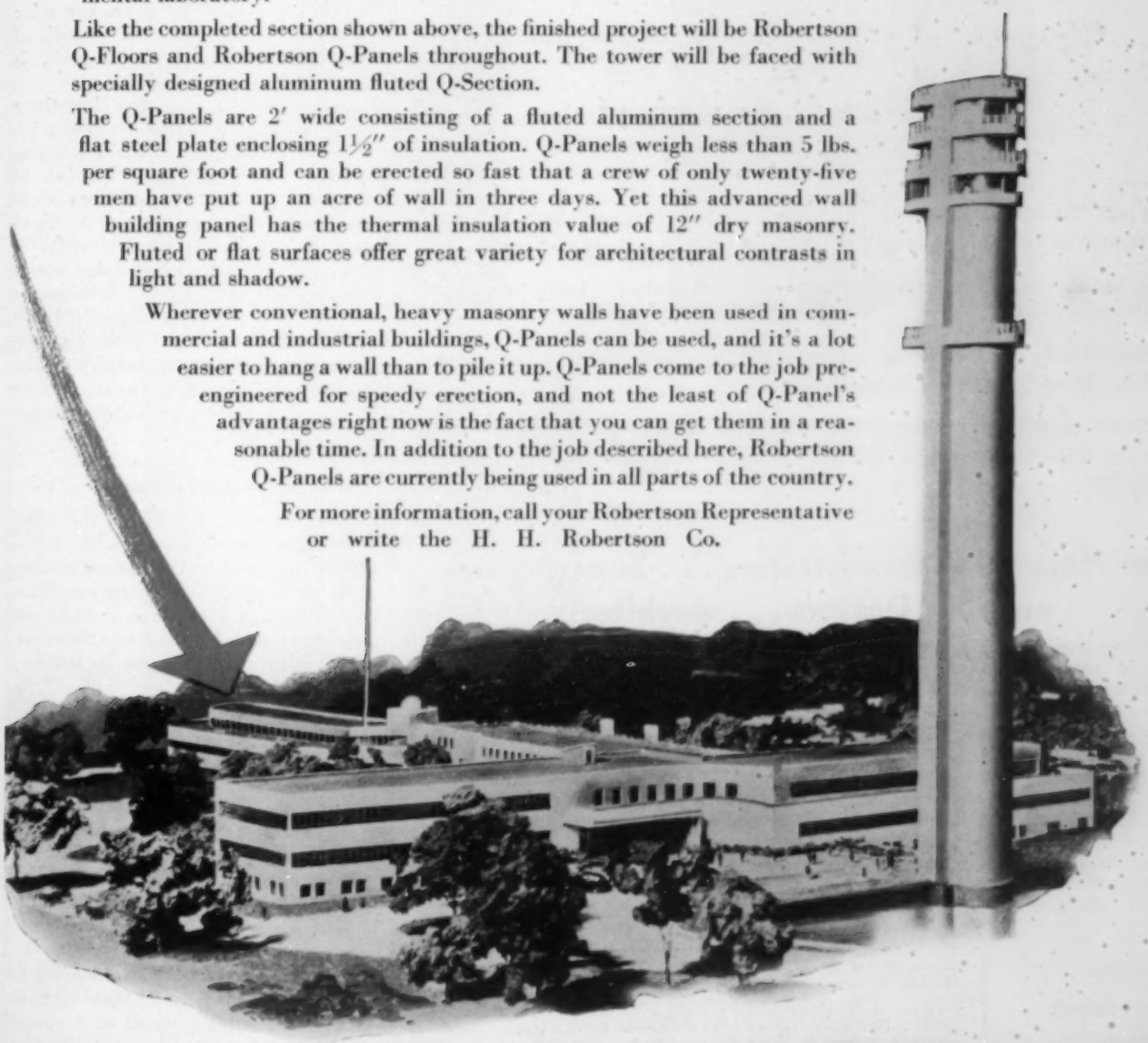
● The scale model below shows how Giffels & Vallet, Inc., L. Rossetti, Engineers and Architects, visualize the new electronics laboratories now under construction at Nutley, New Jersey, for the Federal Telecommunication Laboratories, Inc. The 300′ tower is in itself a microwave experimental laboratory.

Like the completed section shown above, the finished project will be Robertson Q-Floors and Robertson Q-Panels throughout. The tower will be faced with specially designed aluminum fluted Q-Section.

The Q-Panels are 2′ wide consisting of a fluted aluminum section and a flat steel plate enclosing 1½″ of insulation. Q-Panels weigh less than 5 lbs. per square foot and can be erected so fast that a crew of only twenty-five men have put up an acre of wall in three days. Yet this advanced wall building panel has the thermal insulation value of 12″ dry masonry. Fluted or flat surfaces offer great variety for architectural contrasts in light and shadow.

Wherever conventional, heavy masonry walls have been used in commercial and industrial buildings, Q-Panels can be used, and it's a lot easier to hang a wall than to pile it up. Q-Panels come to the job pre-engineered for speedy erection, and not the least of Q-Panel's advantages right now is the fact that you can get them in a reasonable time. In addition to the job described here, Robertson Q-Panels are currently being used in all parts of the country.

For more information, call your Robertson Representative or write the H. H. Robertson Co.



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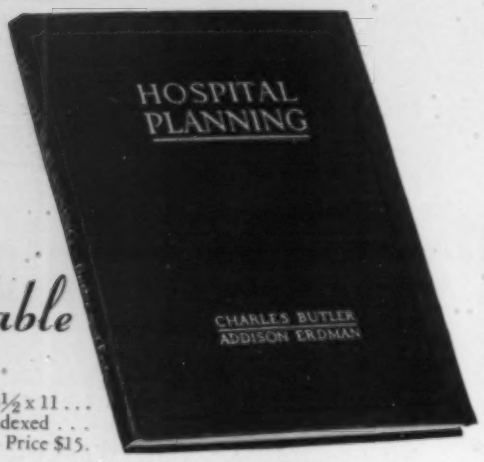

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— presents the plans of 51 selected hospitals . . . represents creative efforts of 30 architects. Includes 32 photographs . . . 11 site plans . . . 187 floor plans . . . 38 special unit plans of rooms, wards, departments . . . numerous construction details.

"Hospital Planning"

by CHARLES BUTLER, F.A.I.A. *and* ADDISON ERDMAN, A.I.A.

A Case-Study Analysis of Modern Hospitals

WHEN "Hospital Planning" first went on sale in June 1946, the rush for copies exhausted the initial print order within a matter of weeks.

A second printing, just off the press, now makes a fresh supply of copies available.

But already our backlog of unfilled orders is commanding a large share of this new supply. And the demand is growing!

Enter your order now — by means of the coupon below — and you can assure yourself of this valuable new book on modern hospital planning.

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Messrs. Butler and Erdman, working as a team of specialists, have directed a nationwide, on-premise survey of hospital planning — in theory, in everyday practice and under the stress of unprecedented demands and emergencies. The most significant examples of hospital planning have been studied, assembled, abstracted and dramatized.

This 236-page volume is for architects and hospital groups alike. It will help architects and engineers to learn of the great advances made in hospital architecture . . . to acquire a working knowledge of hospital procedure . . . to avoid the many pitfalls which beset the hospital planner. It will help hospital administrators to visualize their problems in terms of community needs . . . show them how others are meeting similar problems. Price $15, postage prepaid.

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THE RECORD REPORTS

(*Continued from page 160*)

require the architect to coordinate the skills of the various specialists in the building industry in order that each resulting structure will fulfill the purpose of its erection."

The statement now being prepared will indicate the goals of professional architectural education — what knowledge and experience a novice practitioner should have by the time he has earned his degree.

Working with Professor Johnstone are two representatives of the National Architectural Accrediting Board: Professor Roy Jones, of the University of Minnesota, president of the N.A.A.B.; and Professor Sherley Morgan, of Princeton University, secretary. William L. Perkins, of Chariton, Iowa, executive secretary of the National Council of Architectural Registration Boards, is also working on the project.

Members of the Executive Committee of the A.I.A. Committee on Education who are assisting Professor Johnstone, include: Professor Loring Provine, of the University of Illinois; Dean Wells I. Bennett, of the College of Architecture and Design at the University of Michigan; Dr. Walter Gropius, chairman of the Department of Architecture at Harvard University; Alexander Hoyle of Boston; Dean Ernest Pickering, College of Applied Arts, University of Cincinnati; and Walter A. Taylor, director of the Department of Education and Research of the A.I.A.

Prizes for Student Builders

The Alabama Branch of the Associated General Contractors has established an annual series of prizes totaling $150 to emphasize scholastic excellence and thorough theoretical training for students enrolled in Alabama Polytechnic Institute's curriculum in Building Construction.

Six prizes will be awarded: (1) the A.G.C. Graduation Prize of $50 for the graduate earning the highest scholastic average during his four-year course; (2) the A.G.C. Thesis Prize of $40 for the graduate presenting the best Building Construction Thesis at the time of graduation; and (3) four A.G.C. Scholars' Prizes, of $15 each, for students earning the highest scholastic average in each of the four years.

The four-year curriculum, leading to the degree of Bachelor of Building Construction was inaugurated at Alabama Polytechnic in 1945. Administered under the School of Architecture and the Arts, it aims to train those who plan careers in the building industry as contractors

(*Continued on page 164*)

Fine Antique English Rooms

OFFERED FOR SALE THIS MONTH

To Close The Estate of Edward I. Farmer

Eighteenth Century Oak Room from Wingerworth Hall, Derbyshire. 30′ by 17′ by 13′ 7″ high.

- Sixteenth Century Oak Room — From Beckington Abbey, near Frome, Somerset. 27′ 10″ by 10′ by 9′ 5″ high.
- Eighteenth Century Oak Room with Grinling Gibbons carved mantle. 21′ 10″ by 19′ 10″ by 12′ 10″ high.
- Great Eighteenth Century Georgian Pine Room — 32′ 10½″ by 16′ 8″ by 12′ 3¾″ high.

At left: Eighteenth Century Georgian Pine Room — Originally the property of the Dowager Duchess of Northumberland, Stanwick Hall, Northumberland. 19′ 6″ by 18′ by 11′ high.

Edward J. Farmer INC.

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or with contracting firms, in the production and distribution of building materials, and in the building inspection services of municipalities and fire insurance rating organizations.

Scholarships Awarded

Two senior students at the School of Architecture, Western Reserve University, have been awarded Charles Frederick Schweinfurth Scholarships administered by the Cleveland Museum of Art for travel and study abroad. The two students named to receive the awards are Richard Vrooman of South Euclid and Donald Spaulding Woodard of Euclid. The first of the two, however, will be unable to take advantage of the scholarship, and will be replaced by an alternate, Gordon W. Canute.

The men will sail for France in mid-June to study at the American Art School of Fontainebleau, Fontainebleau, France, from July 1 to September 1. They will return to Western Reserve in the winter session for an additional session's work. Both men are veterans with overseas service.

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Ovens
The No. 959, one of 22 Blodgett models now also available in Monel
Now you can buy Blodgett's De Luxe No. 900 Series ovens in #35 MONEL, including complete exterior and all interior surfaces normally subject to corrosion (except shelves). This gleaming, polished metal adds to Blodgett's other famous features: Longer life Greater beauty Amazing cleaning ease Freedom from service worries. Write today for descriptive folder.
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Exhibits of Student Work

A comprehensive exhibition of student work and methods of instruction at the Institute of Design, Chicago, opened recently at Harvard University and the Toledo Museum of Art, and is to be shown nationally. Consisting of over 125 photographs of all phases of work at the Institute, the exhibit is mounted on 45 panels, comes with a portable gallery. Three copies were made, the third having been sent to the Board of Regents of the State of Mississippi, which has under its jurisdiction all the secondary schools and state colleges in Mississippi.

The exhibition is divided into sections paralleling the course of instruction at the Institute: Foundation Courses, showing work and methods in free experimentation in line, color, wire and other materials, hand sculptures, photograms; Architecture, time and motion studies, plans, etc.; Photography; Product Design, studies, plans and furniture actually constructed; Visual Design, advertising, typography, display arts.

Heating Course Announced

A second Short Course in Hot Water and Steam Heating, sponsored jointly by the Institute of Boiler and Radiator Manufacturers and the University of Illinois, will be given at the University June 15–17.

Students will be divided into two groups — beginners and advanced — and will have separate classes for individual heating problems. All will attend the lectures, however, which will cover heat loss calculations, blueprint reading, fuels and combustion, panel heating problems, and baseboard radiation.

Requests for information about the course should be addressed to H. C. Rountree, Assistant Director, Division University Extension, Room 118A, Illini Hall, University of Illinois, Champaign, Ill. Reservations will be made in the order in which they are received.

Bulletins Available

More than 1,500,000 copies of the non-technical informative circulars for home builders and planners prepared by the Small Homes Council at the University of Illinois have been distributed. The 19th in the series, "A Basic Farmhouse Plan," was issued recently, and will be sent out free of charge until the next circular is issued. A small charge is now made for back numbers, but the set of all 19 is available for $1.50. Requests for the bulletins should be addressed to Small Homes Council, Mumford House, University of Illinois, Urbana, Ill.

Structural engineers and architects

(*Continued on page 166*)

CONTROLENSES* develop an All-TIME HIGH in Lighting Effectiveness . . at Foley's

KENNETH FRANZHEIM
Architect, Houston, Texas

RAYMOND LOEWY
Retail Planners & Designers

EDWARD E. ASHLEY
Consulting Engineer, New York

CONTROLENSES Provide 16% MORE LIGHT: 12% WIDER DISTRIBUTION

Excerpt from a recent article in "Illumination"

"The reflectors containing Fluorescent lamps as well as the Incandescent units are equipped with Holophane CONTROLENSES. The decision to employ these lenses was reached after tests which showed that *16 per cent more light* was obtained with lens equipped facilities than with the louvered equipment tested, further, that the effective *distribution was 12 per cent wider* with the lenses than with the louver equipment and that *illumination was more even.*"

The installation at Foley's is one more evidence of the maximum effectiveness of Holophane CONTROLENSES for store lighting . . . To a degree never before reached by built-in lighting, CONTROLENSES afford opportunity for complete freedom in planning. By their extraordinary flexibility, their ability to produce the exact quality and quantity of lighting at any time— CONTROLENSES eliminate the costly "make shift" factor once and for all.

BASIC ADVANTAGES OF CONTROLENSES:

1) The selective line of Holophane CONTROLENSES now embody developments that permit the designer to combine incandescent and fluorescent sources for the most satisfactory color balance or for the effects of emphasis...with literally no break in the integrated design.

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GOLDEN JUBILEE — Holophane — SINCE 1898 — SCIENTIFIC ILLUMINATION

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working with curved beams will find two new bulletins published by the University of Missouri helpful in making their stress computations. Entitled "Influence Lines for Horizontally Curved Fixed-End Beams of Circular-Arc Plan" (Bulletin 35), and "Stresses in a Uniformly Loaded Circular-Arc I-Beam" (Bulletin 36), the two new publications may be obtained upon request from the Director of Engineering Experimental Station, University of Missouri, Columbia, Mo.

Curriculum Extended

The curriculum in architecture for the Department of Architecture of Pratt Institute, Brooklyn, N. Y., will be increased in duration to five years for freshmen entering in September of 1948. Work in abstract design, architectural design, construction and town planning has been added in the professional field. Advanced work in physics and an integrated course of social studies also are now required of architectural students. Olindo Grossi is chairman of the Department.

Appointment

The University of Miami has retained George Farkas, Industrial Designer, of George Farkas, Inc., Miami Beach, Fla., to design the furniture and interiors for the new $5 million University of Miami Project in Coral Gables, Fla., which includes a Students Project of 533 apartments of one-, two- and three-bedroom units. The project is progressing rapidly and is expected to be completed during the fall of 1948.

Loebl Appointed

Jerrold Loebl, prominent Chicago architect, has been appointed chairman of the Architecture and Applied Arts division of the $15,000,000 Special Development Program campaign of Illinois Institute of Technology. His division of the program will be devoted primarily to the provision of funds for Illinois Tech's new $500,000 Architecture and Applied Arts building. Architects serving with him are Raphael N. Friedman, of Friedman, Alschuler & Sincere; John O. Merrill, of Skidmore, Owings & Merrill; Roy T. Christiansen, building commissioner for the city of Chicago; Charles F. Murphy, of Naess & Murphy, Inc.; Charles Herrick Hammond; Alfred Shaw; and Henry Balfranz, northwest district manager of the Westinghouse Electric Corp., Elevator Division.

Designed by Ludwig Mies van der Rohe, chairman of Illinois Tech's department of architecture, the new buildings for the campus are now under construction and five have been completed.

EXHIBITION

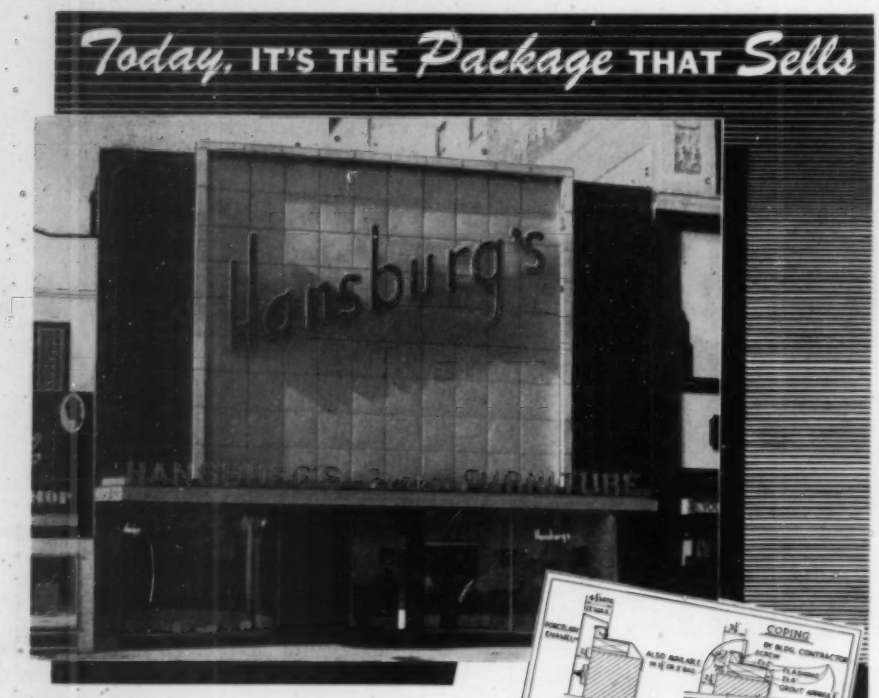
An exhibition of "Furniture of Today" is currently on view at the Rhode Island School of Design Museum in Providence. It represents a cross-section of modern furniture now available in retail stores, and includes some 100 pieces designed by 31 artists. Concentrating primarily on the living room, the exhibit also includes furniture for the dining room and bedroom, as well as a number of different types of lamps and a group of carpets showing a wide range of color, style and texture.

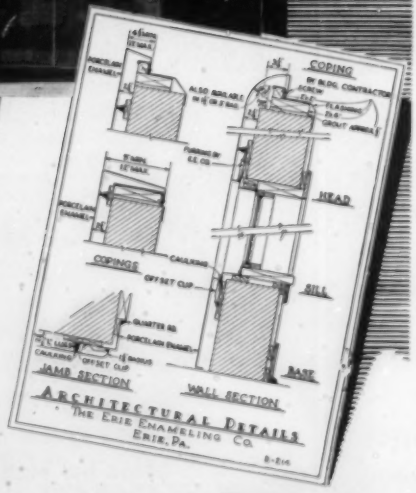
Among the designers whose work is included are Alvar Aalto, George Nelson, T. H. Robsjohn-Gibbings, Saarinen-Swanson, Morris Sanders, Andre Dupres, and Henry Wright and George Nelson.

LOW-COST HOMES BUILT

Builders in three widely separated sections of the country — in Arizona, Michigan and Tennessee — are showing that sound and livable houses can be

(*Continued on page 168*)





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Our Engineering Department is always at the disposal of the architect.

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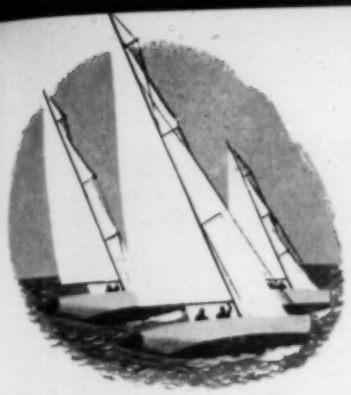

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Trinity White Portland Cement plain or waterproofed

built and financed for prices under $4000, according to a story in a recent issue of *Insured Mortgage Portfolio*, official organ of the FHA. More than 650 such homes have been constructed in Arizona and a considerable number in the Detroit area.

In Jackson, Tenn., a local lumber yard has built 28 homes under the Class 3 program (loans up to $3000 insured under Title I of the National Housing Act), all of which are owner-occupied, and has more than 20 additional units under construction for owner occupancy. The company has worked out five basic designs, each of which includes two or three bedrooms, living room, bath and kitchen. The houses sell for from $3000 to $3600, exclusive of land.

The Arizona houses are of several types, including standard masonry and frame construction, prefabricated frame and stucco units, and factory-made units.

Rathmann, Koelle and Carroll, Architects
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Added stories for increased sales space and a public auditorium will permit Stix, Baer & Fuller Co. to serve St. Louis better.

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Mr. Blandings gets his (RKO) dream house

THE DREAM COMES TRUE

Mr. Blandings' house no longer is a dream. When RKO bought Eric Hodgins' book, MR. BLANDINGS BUILDS HIS DREAM HOUSE, they discovered they would have to construct a complete house in order to film the scenes called for in the script. This they did, with the results shown above. Then their publicity agents got busy and arranged to have Dream Houses built in 68 cities all over the country.

The picture itself is a delightful piece of entertainment, starring Cary Grant and Myrna Loy as the befuddled but determined Mr. and Mrs. Blandings. Melvyn Douglas plays their harassed architect. Actual architect for the RKO house was Carroll Clark.

TWO NEW BOOKLETS

Hotel Fire Safety

The Committee on Model Hotel Fire Safety Law of the Fire Marshals' Section, National Fire Protection Association, has published a *Guide for Hotel Fire Safety Law* covering the safety recommendations made by the Committee. Subjects include: type of construction and materials to be used; fireproofing of structural parts; number and type of means of egress, aisles and passageways, interior and outside stairs; wall openings; exits and exit signs; doors and doorways; protection of stairways and other vertical openings; emergency lighting systems; automatic sprinkler systems; safe installation of heating apparatus.

Copies of the *Guide* may be obtained from the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass., for 50 cents each.

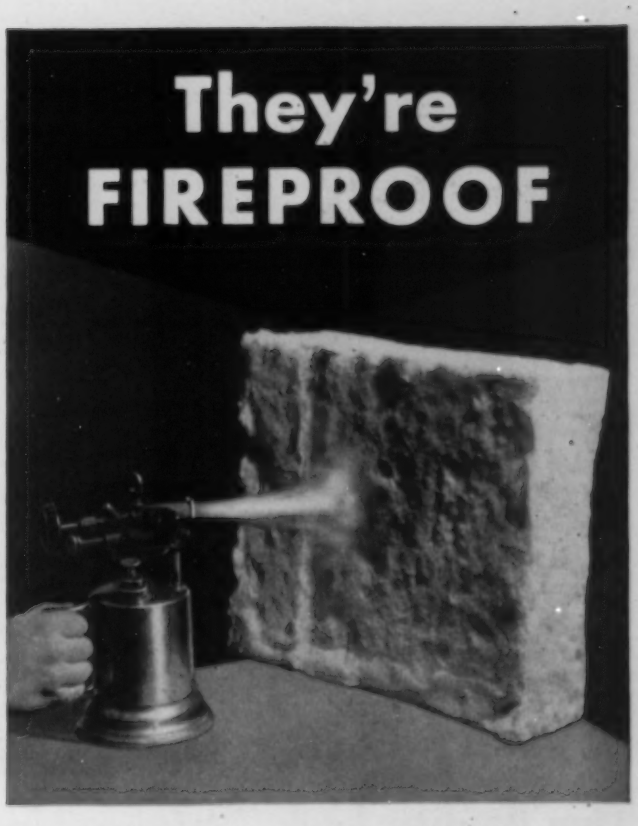
Apprenticeship Credit

In answer to the many inquiries regarding the amount of credit for previous experience an apprentice is customarily given on his apprenticeship term, and how to determine the credit, the Bureau of Apprenticeship, U. S. Department of Labor, has published a comprehensive booklet on the subject.

Entitled Apprenticeship Credit for Previous Experience, the publication is based on a study of practices in 39

(*Continued on page 170*)

Protect your clients with Gold Bond Rock Wool Batts



You have a real obligation and a definite responsibility to make sure your clients get two things from the insulation you specify—*full fire protection* and maximum efficiency for *fuel savings and comfort.* Gold Bond Rock Wool Batts are as *fireproof* as the rock from which they're made. And when you specify them *full-thick*—not one or two inches thick—they'll completely fill the wall space between the studs and provide an effective fire barrier and full insulation value. Play it safe! Always specify *full-thick* Gold Bond Rock Wool Batts.

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apprenticeship programs established in a variety of trades in both the construction and the metalworking industries, in different localities throughout the country. It discusses in detail credit for experience while in military service or in civilian occupations, and describes principles which should govern the granting of credit and suggested procedures which might be employed for evaluating past experience and allowing proper credit.

Also included in the booklet are suggested forms and other devices which joint apprenticeship committees and employers may use in evaluating previous experience. Copies of the booklet may be obtained free of charge from the Bureau of Apprenticeship, U. S. Department of Labor, Washington 25, D. C.

ADDENDUM

The florist's shop shown on page 138 of the April ARCHITECTURAL RECORD was inadvertently credited to Marvin J. Neivert, Architect, instead of to Marvin J. Neivert and Robert Kaplan, Architects. Our apologies to Mr. Kaplan for the accidental omission of his name.

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Yes, here is a lock with dignity, grace and untold utility for the home of today. Use this Rite-Lock on sliding doors wherever they may be ... exterior, bath, closet, or general interior. Even though doors used may vary in thickness as much as ⅝-inch this lock adjusts to the correct size. The latching action is positive and, for maximum security, a pin-tumbler ¾" diameter cylinder operation is optional. The Rite-Lock escutcheon measures a mere 4½"x2⅞"—is unit type and therefore installs in minimum time. All exposed parts are solid brass; four finishes are standard; the inner mechanism is rust-proofed steel. For further information ask your local hardware consultant or write direct.

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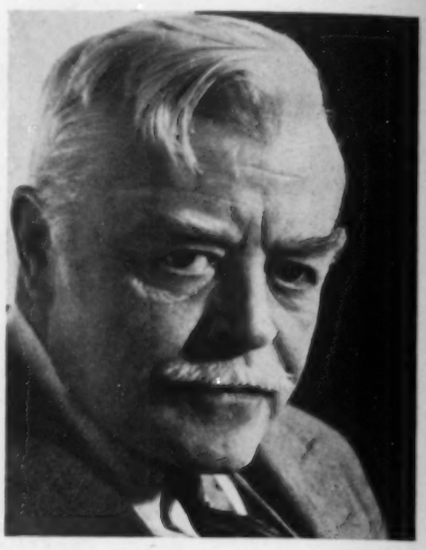

Architect Raphael Hume, consultant for the rebuilding of University of Nymegen

HUME TO HELP HOLLAND

Raphael Hume, noted American architect, has been invited to serve as consultant architect on the rebuilding of the University of Nymegen in Holland, to be restored as a permanent memorial to the European dead of the American 82nd Airborne Division which liberated Holland. Mr. Hume has accepted the invitation.

ENGINEER HONORED

A life membership certificate was awarded to Stanley Macomber, president of Macomber Incorporated, Canton, Ohio, at the Akron Section meeting of the American Society of Civil Engineers on February 16. Mr. Macomber, a member of the Society for 35 years, was the originator of the Bar Joist

OFFICE NOTES

Offices Opened, Reopened

Joseph Bailey, A.I.A., has announced the opening of his office at 1307 Westwood Blvd., Los Angeles 24, Calif.

Leo L. Fischer, A.I.A., of New York City has announced the opening of New Jersey offices for the practice of architecture and related design at 25 Commerce St., Newark 2, N. J.

Nicholas A. Kabush, Architect, has opened an office for the general practice of architecture at 318 Rookery Bldg., Spokane 8, Wash.

Norman E. Keller, A.I.A., has announced his resignation as head archi-

(*Continued on page 172*)

1 HERE'S RADIANT HEATING

See those arrows coming from the Modine Convector Panel below the window? That's *radiant heating* — mild radiant heat in just enough quantity to offset heat loss from window area.

2 HERE'S CONVECTION HEATING

These arrows illustrate *convection heating.* Hot water or steam passes through copper heating unit which draws cooler, floor-line air into bottom of convector where it's warmed, rises and passes out through grille.

Modine Convector Radiation blends both for the greatest forward step in modern heating science!

MODERN heating at its best — that's what engineers and architects are calling Modine Convector Radiation. This blended combination of radiant heating and convection heating is *the* dependable new hot water and steam heating system for moderate cost homes and apartments . . . as well as commercial and institutional buildings.

Right now Modine Convector Radiation costs less than any other form of radiation. Compare these outstanding features which it gives you: 1) individual room control. 2) instant response to automatic controls. 3) gentle air circulation without the use of moving parts that wear out. 4) distinctive room charm and cleanliness without unsightly radiators.

If you're planning to build or modernize, specify Modine Convector Radiation. Call Modine's Representative listed in the "Where-to-Buy-it" section of your phone book. Or send for new, free Convector Booklet! MODINE MFG. Co., 1510 Dekoven Ave., Racine, Wis.

Modine
CONVECTOR RADIATION
The modern "proved by use" heating method.

tect for Deere & Company, agricultural implement manufacturer of Moline, Ill., to enter private practice with offices at 925–24th St., Moline, Ill.

Clyde Trudell has announced the opening of a studio for the practice of architecture at 183 Bulkley Ave., Sausalito, Calif.

New Addresses

The following new addresses have been announced:

The Ballinger Company, Architects and Engineers (Robert I. Ballinger, A.I.A.; Clifford H. Shivers, R.A., R.E.; Carl de Moll, R.A., R.E.; Stanley Smith, R.E.; Valentine B. Lee, Jr., A.I.A.; and Harry W. Moser, R.E.), 121 N. Broad St., Philadelphia 7, Pa.

W. D. Faint and Company, Engineers, 1915 Browning Rd., Pennsauken, N. J.

John T. Fairhurst Co., manufacturer of the Fairhurst Unitfold Partitions and Disappearing Door Wardrobes, 45 W. 45th St., New York 19, N. Y.

Office of Carleton Granbery (Diana and Carleton Granbery), 110 Whitney Ave., New Haven, Conn.

Laurence R. Moon, Architect, 36 Grand Ave., Englewood, N. J.

Harry Preble, Jr., Industrial Designer, Wilton Rd., Westport, Conn.

Morgan Stedman, Furber Libby, Dorothy Gray, Registered Architects, J. C. Penney Bldg., 310 University Ave., Palo Alto, Calif.

Martin Stern, Jr., 8912 Burton Way, Beverly Hills, Calif.

Willis Morris & Crain, A.I.A., 3330 Graustark, Houston 6, Texas.

New Firms, Firm Changes

James Bennett Hughes, A.I.A., has announced that he and Harry M. Denyes, Jr., A.I.A., have dissolved their partnership. Mr. Hughes will continue the practice of architecture at the same address, 187 S. Woodward Ave., Birmingham, Mich.

Walter P. Margulies and J. Gordon Lippincott, senior officers of the New York design firm, J. Gordon Lippincott & Co., Inc., have announced that the name of their firm has been changed to Lippincott & Margulies, Inc. The main offices of the organization will continue to be at 500 Fifth Ave., New York City.

Ralph N. Pollack, A.I.A., and Charles St. George Pope, A.I.A., have announced the formation of the firm of Pollack & Pope for the general practice of architecture, with offices at 605 Market St., San Francisco 5, Calif.

The retirement of John Schofield, O.B.E., chief architect, Canadian National System, and the appointment of George F. Drummond as his successor have been announced by N. B. Walton, executive vice president. Mr. Schofield will continue as chief architect of Trans-Canada Air Lines.

ELECTIONS, APPOINTMENTS

L. M. Cassidy, vice president for sales of Johns-Manville Corp., has been elected chairman of the board of governors of the Asphalt Roofing Industry Bureau.

Elmo G. Liddle, Sanitary Engineer and Assistant Chief Plumbing Inspector for the city of Detroit, Mich., has been appointed secretary of the Plumbing & Drainage Manufacturers' Association. Offices of the Association are now located at 18925 Grand River Ave., Detroit 23, Mich.

The housing firm of Harrison, Ballard & Allen of New York has been retained by the Auburn, N. Y., Chamber of Commerce to conduct a complete housing survey of that city. The survey will establish a program and indicate the market, and desirable sites for public, private and institutional housing. The firm has made similar surveys in Binghamton, Johnson City, Endicott, Amsterdam and Fulton.

UNITED AIR LINES

Maintenance Base—San Francisco

MISS NO BETS

Bradley DUOS have no faucets — *hands touch nothing but the clean spray of water* —foot-control operation eliminates chance for skin infections; a touch of the foot turns spray "on" and removal automatically shuts it "off".

Each Bradley Duo-Washfountain Accommodates TWO Persons Simultaneously

Since ONE DUO takes the place of TWO single-person wash basins worthwhile economies are realized in space saved, piping connections eliminated, janitor work minimized and reduced water consumption. The bowls of DUO-Washfountains are finished all-over in white acid-resisting vitreous enamel. They are nationally distributed through plumbing wholesalers. . . . BRADLEY WASHFOUNTAIN CO., 2227 W. Michigan Street, Milwaukee 1, Wisconsin.

BRADLEY Duo Washfountains

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"Browne folding type windows are a boon to modern architecture. They combine beauty and efficiency with minimum maintenance."
WALTER W. AHLSCHLAGER
Architect

FRANKLIN LIFE BUILDING
Springfield, Illinois
Equipped with
BROWNE
folding type aluminum
WINDOWS

Architect, Walter W. Ahlschlager
Contractor, Evans Construction Co.

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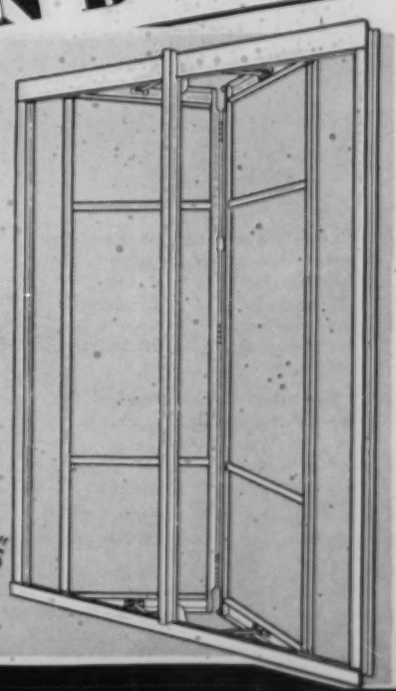
in Design, Performance, Features

One glance tells you BROWNE folding type windows lead the field with features that give you an entirely new conception of window luxury, utility, and absolute economy. Built of heavy aluminum extrusions, they offer many other advancements . . . both sides of glass can be cleaned from the inside . . . minimum maintenance cost! These and other features have made the BROWNE window a favorite of architects everywhere.



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Qualified sales representatives in all architectural centers
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NEWS FROM CANADA (*Continued from page 10*)

Double Depreciation Dud?

Allowance of double depreciation for income tax purposes has failed to encourage construction of low and moderate rental housing in Canada. This fact is revealed in the annual report of the Central Mortgage and Housing Corporation, the Dominion Government's agency in the shelter field.

To qualify for double depreciation, private builders must provide dwelling units in their projects which have, on the average, 3.65 rooms and bathroom, 750 sq. ft. of floor area, and rent for not over $70 a month. In the entire country, only 28 projects containing 370 such dwelling units were provided last year. To put this figure in its right perspective it should be noted that private builders were responsible for 9100 of the 23,100 dwelling units erected for rent. Total production for rent and sale amounted to 77,000 units.

The C.M.H.C. report points out that labor and materials for residential building rose 18 per cent in cost in 1947, reaching an index figure of 178 (100: 1935–39 average). Shortage of materials and lower labor productivity boosted costs 25 per cent in some instances. Most builders claim the official index fails to consider all cost factors and, with the trend continuing upward, it will be increasingly difficult to qualify for the double depreciation allowance.

Malak Photo

Albert James Hazelgrove, Ottawa architect, chosen to head the 41-years-young Royal Architectural Institute of Canada in '48

Architects Hold Assembly

Canada's architects, through their official Royal Architectural Institute of Canada, have taken an historic step towards encouraging better community building. Meeting in annual assembly at Ottawa, Feb. 24–25, they called upon the Dominion Government's Central Mortgage and Housing Corporation to appoint a special advisory committee to investigate the problem of neighborhood design, and to advise on desirable standards for residential developments. Appointment of such a committee is provided for by the National Housing Act. Membership would be drawn from the whole construction industry.

The passing of this resolution climaxed two crowded days for delegates representing the 110 architects registered in component provincial associations of the R.A.I.C. Mornings were devoted to discussion of official business, afternoons to seminars on schools, hospitals and building research. The program was highlighted by a visit to the offices of the National Capital Planning Committee. There delegates viewed the master plan for the Ottawa district being prepared by a group of Canadian experts aided by Jacques Greber, distinguished French town planner, as consultant.

All the way through—

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There's no surface decoration to wear off with Amtico Rubber Tile. The rich marbleized patterns go all the way through, to give your clients years of faithful service.

No other flooring material has such flexibility and resiliency, no cracked or chipped tiles to be discarded when the job is finished. That same resilience means sound absorption. Jarring footsteps are hushed, as if by fine carpeting.

With the wide range of glowing colors available, you can plan floors outstanding in design.

Upkeep and maintenance are kept at a minimum. Mop it, and with an occasional waxing the gleaming beauty is a constant source of satisfaction.

Samples and descriptive literature are available — send for yours and be prepared to offer your clients this premium floor.

SMOLDERING CIGARETTES AND STAINS LEAVE NO PERMANENT BLEMISHES ON AMTICO RUBBER TILE

AMERICAN TILE & RUBBER CO.

TRENTON, NEW JERSEY

New All-Welded Studding Cuts Construction Costs $16,000

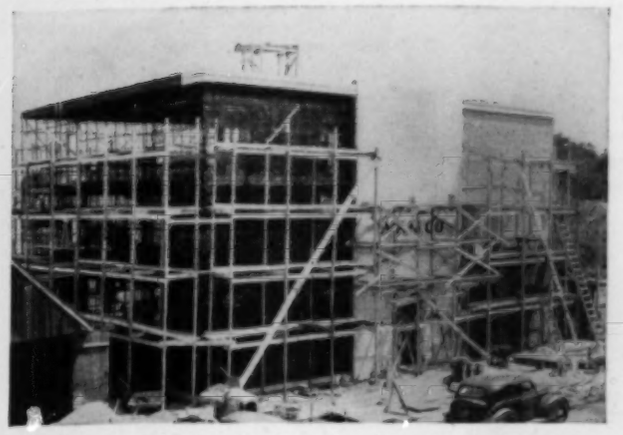


Fig. 1. The new WKM Valve Co. three-story office building. The Matthews Construction Co. and the Brown Construction Co., contractors.

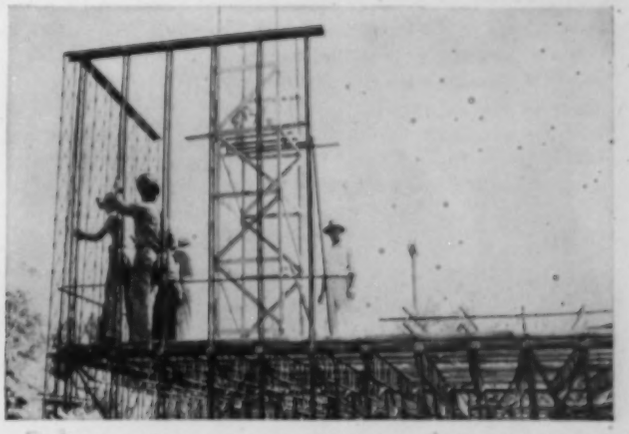


Fig. 3. Second floor panel section being held in place for tack welding.

By Richard P. Matthews
The Matthews Construction Co.
Houston, Texas

A REDUCTION in the construction time of a three-story office building from an estimated seven weeks to three weeks has been accomplished through a new development using prefabricated sectional panels of steel studding. With conventional methods of construction, this building framework would have cost $2.65 per square foot. With our prefabricated method the cost was $1.07 per square foot, which meant an overall saving to the builder of approximately $16,000. Erected without the use of scaffolding, the new arc welded three-story office building of the WKM Valve Co. at Houston, Texas, is fireproof, shrinkproof and free from warpage (Fig. 1).

The office building when completed will be windowless and will be finished with a stucco exterior and a plaster and veneer interior. The panel-type construction has an additional advantage to the builder because of the ease in which plumbing, wiring and insulation can be installed.

The on-the-ground method developed by our company for prefabricating the sectional panels makes use of light weight, lattice web, single piece Bethlehem stretched I beam studs of ⅛" minimum steel thickness, having a 1¼" flange, and cut to specified length. The studs, when braced, support a safe load of 6700 pounds.

Two assembly jigs, welded from pipe and angle iron, hold the ten-foot panel assemblies and are made to swing to allow downhand welding for the welder's convenience (Fig. 2). In building up the studding panel, the channel girth is held in place with "C" clamps and the vertical studding welded first to the channel girth. The cross bracing is then welded into place and the panel removed from the jig ready for assembly onto the building framework.

The sectional panels for the first floor have a girth welded both top and bottom. The second and third floor panels have a panel girth at the top only and also have additional angle braces to keep the panel unit in square for later assembly to the building framework.

The prefabricated panels can be carried easily by four men who also hold the panels in place while the panels are being tack welded into their position on the building framework. (See Fig. 3). Although no scaffolding is needed in the assembly of the building framework, a jig pole is used to hoist the panel sections into place on the third floor level. The total erection time on the building framework is 21 days including all set-up preparation and using Lincoln 200 and 300 ampere "Shield-Arc" Welders with "Fleetweld 5" and "Fleetweld 7" electrodes.

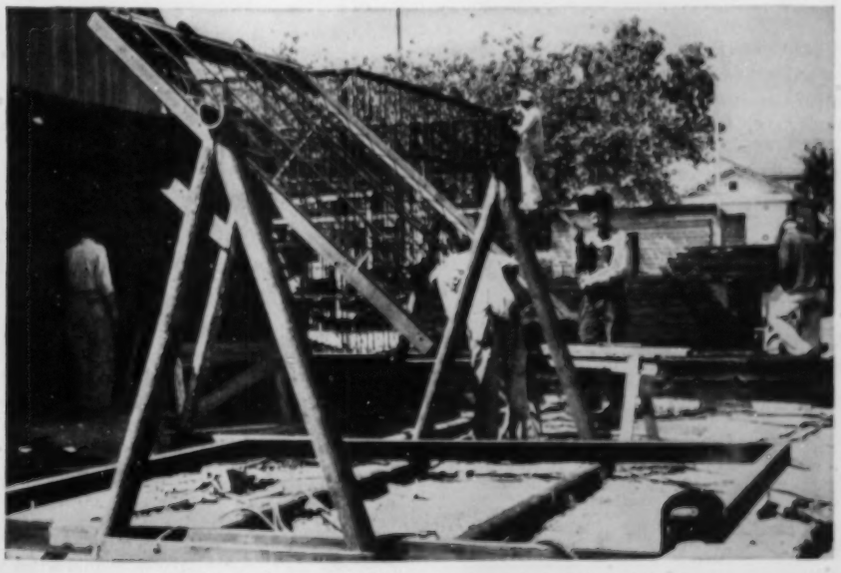


Fig. 2. On-the-ground prefabrication of ten-foot panel sections.

The above is published by LINCOLN ELECTRIC in the interests of progress. Studies in Structural Arc Welding available to architects and engineers. Write The Lincoln Electric Company, Dept. 172, Cleveland 1, Ohio. **Advertisement**

(*Continued from page 148*)

the determination of correct duct sizes.

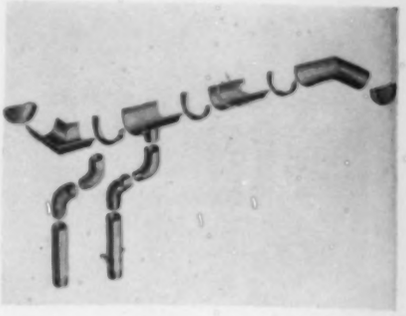
A second series of tests by the engineers involves the Btu. ratings of the units manufactured by them. These tests are concerned with (1) the combustion efficiency of the burner, (2) transfer efficiency from the products of combustion to the heating surface and from the surface to the air stream, and (3) the distribution of temperature of the heating surface.

Since all of the units are rated on the basis, of a 90° F. temperature rise through the unit, a heat balance is prepared for each operating condition, checking input against output to be assured that each model produces high efficiency. Jackson & Church Co., Saginaw, Mich.

ALUMINUM EAVES TROUGH

Aluminum has been extended to use in rain-carrying equipment with the production of aluminum eaves trough, conductor pipe and fittings. This equipment follows standard designs: the eaves trough is available in round and square forms; conductor pipe comes in three forms — round, corrugated and square.

Described as rust, rot and vermin-proof, its use in eaves trough and conductor pipe is said to insure maximum efficiency with a minimum of maintenance and replacement expense. It



Aluminum eaves do not rust nor discolor

weathers to a soft, gray-white so that it does not require painting; yet it is easily painted if desired. The manufacturer claims that aluminum has no toxic effect on water which comes into contact with it.

Its light weight is especially advantageous as a factor in application. A 10-ft. length of aluminum eaves trough weighs less than 3¼ lb.

Another significant advantage reported is that aluminum does not stain, thus eliminating the unsightly brown and green streaks of rust and corrosion on painted walls, sidewalks, and flagging.

The new equipment is installed by the traditional slip-joint method; soldering is unnecessary.

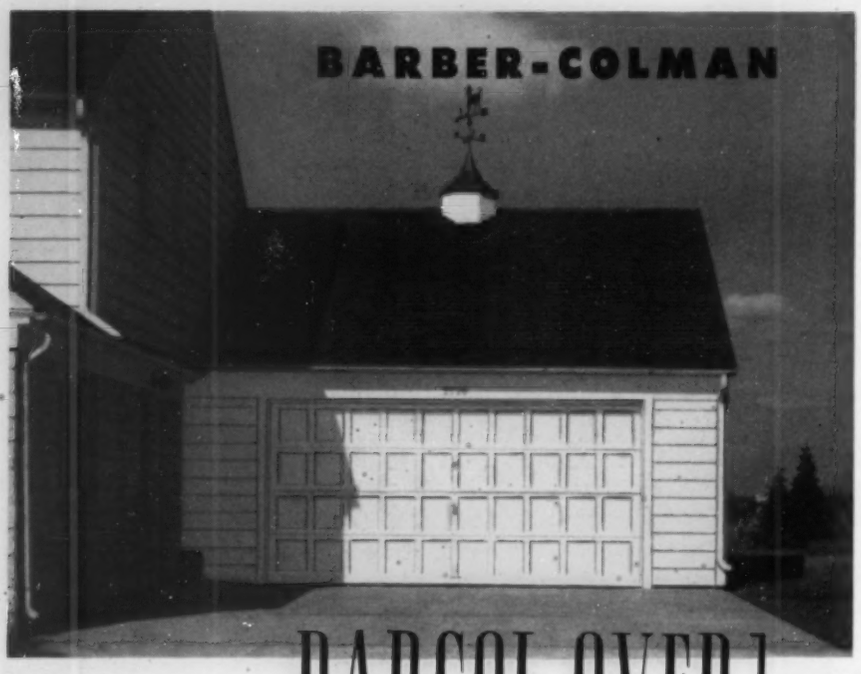
For drainage, continuous slope (1 in. in 16 ft.) is necessary. The number of conductors for a given watershed is computed by using 1 sq. in. of conductor cross-section to 100 sq. ft. of roof area. The 3-in. round conductor pipe has a cross section of about 7 sq. in. or enough for 700 sq. ft. of roof. Drops are factory sealed into individual trough sections. Reynolds Metals Co., Louisville, Ky.

RESILIENT FLOORING FOR RADIANT HEATING

Results of exhaustive three-year tests indicate that resilient flooring materials for use over radiant heated subfloors can be selected by much the same standards as for subfloors in rooms where convector-type or conventional heating systems are installed.

As a result of the increased popularity of radiant heating in modern homes and buildings and the resulting demand for resilient floor recommendations where radiant heating is involved, the Armstrong Research Laboratories began

(*Continued on page 178*)



THE CHOICE OF BUYERS WHO INVESTIGATE BEFORE THEY BUY

BARCOL OVERdoor

WEATHERTIGHT. Special roller crank closing action moves the entire door smoothly and evenly against the stop strips in the last few inches of its downward travel, effectively sealing the opening against dust, dirt, litter, snow, rain, sleet, and wind.

EASY WORKING. Tailored twin-torsion counterbalancing springs accurately support the weight of the door, so minimum effort is required for raising or lowering. Sticking is eliminated by the fast-freeing effect of the closing action.

DURABLE. Barcol OVERdoors give long, trouble-free service because of strong construction, accurate assembly, and good installation by factory-trained men.

SEE OUR CATALOG IN SWEET'S

DOUBLE-WIDTH FEATURES. Above we show a double-width Barcol OVERdoor as used on a modern two-car garage. The use of wider single doors like this reduces the cost of installation, reduces the mechanism, eliminates the center post, gives more room for maneuvering two cars, and reduces the chances of damaging cars or garage by collision. These advantages are worth considering for every two-car garage door installation, whether new or remodeling.

ELECTRIC OPERATION. Barcol Electric Door Operators are available for swinging, sliding, and overhead type doors, and for sliding gates. They offer the convenience and protection of switch control or the amazing Radio Control.

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MAKES TOUGH PIPING JOBS EASY!

FOR piping that *has* to last – buried in concrete or enclosed in partitions, as in radiant heating – Flagg-Flow *Threadless* Malleable Fittings may be installed and safely forgotten.

- For piping in hard-to-reach spots – in corners, against walls, or around machinery – Flagg-Flow can be used wherever pipe will go.
- For piping subject to vibration, expansion or contraction, Flagg-Flow joints are stronger than the pipe itself.
- For any piping, Flagg-Flow gives new freedom of layout and ease of installation.

Here's why

Silver brazing alloys flow by capillary action to permanently bond pipe and fitting into "one-piece" security. There's no space needed for wrench clearance, no special position required for brazing. Finally, there's no fear of "leakers", for Flagg-Flow are the only stock 150-pound malleable fittings air-tested under water.

YOURS FOR THE ASKING is a profusely illustrated catalog giving complete information on Flagg-Flow, the *threadless* malleable fitting about which the whole country is talking.

Independent laboratory tests prove that Flagg-Flow joints are stronger than the pipe itself. Illustrated is a torsion test. In a tensile test, the pipe failed at 65,000 pounds per square inch without harming the joint.

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MALLEABLE IRON FITTINGS, STD. EX. HVY. AND AAR • CAST IRON FITTINGS • DRAINAGE FITTINGS • FLANGE UNIONS • FLANGES
GROUND JOINT UNIONS • BRONZE THREADED FITTINGS • BRONZE SOLDER FITTINGS • UNDERGROUND TANK FITTINGS

(*Continued from page 176*)

conducting a series of continuous tests on the subject over three years ago. Observations were made on all types of resilient floors installed over various types of radiant heated subfloors.

Since the tests showed the effects of varying degrees of temperature on the hardness, composition and indentation properties of all resilient floorings, certain specific recommendations could be made as to construction methods for radiant heating installation where resilient floor surface is to be applied.

Tests showed that water temperatures should be limited to 120° F. because temperatures above this point may result in excessive indentation of resilient flooring, especially in asphalt tile.

The same type of furniture rests and cups as normally used can be used satisfactorily to protect resilient floor materials that are to be used with radiant heating.

Effects of radiant heat on the adhesives used for installing resilient floors also were observed to result in no failure of the resilient flooring or their respective installation adhesives during the course of the experiments. Armstrong Cork Co., Lancaster, Pa.

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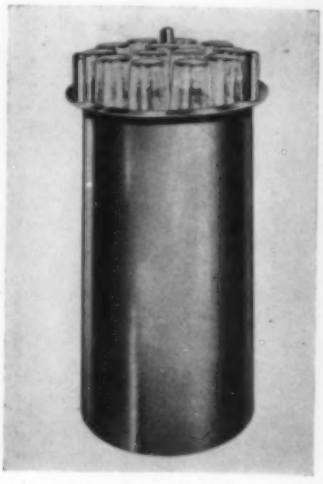

Compact dispenser for 75 cups or glasses

CUP, GLASS DISPENSER

Fast, clean, efficient storage and automatic dispensing of cups or glasses is claimed for the new *Lowerator Dispenser*. The manufacturer has recently improved this model for cups or glasses by replacing the open-cage unit with a tube type construction used on other Lowerator units, with no additional outside counter covering needed. The possibility of dirt and dust accumulating in cups and glasses is eliminated by this improved construction.

The BBC-12 Lowerator stores approximately 75 cups or glasses below the counter and takes up less than 15 in. in top-of-counter space. Cups or glasses rest on stainless steel trays in the unit. When the cups or glasses from the top tray are removed, the next full tray automatically moves up to replace it. The unit's only operating mechanism is a calibrated spring which keeps a tray at counter level whether loaded, half filled or nearly empty. American Machine & Foundry Co., 485 Fifth Ave., New York, N. Y.

WATER HEATER

Protection against corrosion is provided in the Bryant Model 115 water heater by the *Protect-O-Rod*, a magnesium alloy rod which extends into the water from the top of the tank. Electrochemical action in water which causes corrosion is transferred to the rod.

The heater is 5 ft. tall in the 30-gal. size; this low installation is made possible by a newly designed down-drafter which reduces normal installation height by 6 to 10 in.

(*Continued on page 180*)

Yes–it's Flexstone

Each ply is a flexible covering of stone!

● The secret of a Johns-Manville Flexstone Roof is in the *felts*. They're made of fireproof, rotproof, enduring *asbestos*.

Flexstone Built-Up Roofs won't dry out from the sun . . . need no periodic coating. They're *smooth-surfaced*, too—permit thorough drainage . . . make any damage easy to locate and repair. They are engineered to each job . . . applied only by J-M Approved Roofers.

J-M asbestos felts are perforated to make application easier . . . give you a smoother job and conform better to irregularities in the roof deck.

Send for Flexstone brochure BU-51A. Contains complete specifications. Address: Johns-Manville, Box 290, New York 16, N. Y.

Made of ASBESTOS

JM PRODUCTS

Johns-Manville FLEXSTONE Built-Up Roofs

(*Continued from page 178*)

The new Model 115 water heater is available for use with natural, manufactured, and liquified petroleum gases and is made in 20-, 30-, 40- and 50-gal. sizes. Bryant Heater Co., Cleveland, O.

THERMOPANE USED FOR SOUND INSULATOR

Thermopane, developed primarily for its heat insulation qualities, is now being used to reduce sound transmission. It is said to reduce sound transmission from one room to another within a building or in providing sound insulation from street noises.

Dr. Paul N. Geiger, University of Michigan authority on sound transmission, estimates reduction in the loudness of noise of approximately 44 per cent would be possible by using double Thermopane, consisting of two sheets of ¼-in.-thick glass with ½-in. air space instead of a single pane of ¼-in. glass.

Thermopane, well known as a heat insulator, is now used to eliminate noise

Libbey-Owens-Ford Glass Co., Toledo 3, Ohio.

WATER COOLER

A triple-purpose water cooler which cools drinking water, refrigerates a storage compartment of 2 cu. ft., and freezes three trays of ice cubes is now available.

The new cooler can be used in the business office or home. It is especially valuable where a small refrigerated storage capacity is desired, for instance in the recreation room, den or small apartment.

The *Sunroc Super Cooler* uses either pressure or bottled water. It employs a static condenser which eliminates a fan or water valve normally used on conventional water coolers. Sunroc Refrigeration Co., Glen Riddle, Pa.

FIRE RESISTANT WOOD

Wood treated to resist fire has solved a unique construction problem for a large Pittsburgh department store. More than 100,000 bd. ft. of yellow pine lumber, pressure treated with special fire resistant chemicals have been used at Joseph Horne Co. to raise 20,000 sq. ft. of flooring to a new level, 16 in. higher than the old.

Under this treatment which involves the forcing of 3 lb. of the chemical into the fibers of every cubic foot of lumber, the lumber is reported to retain all the features of workability and easy handling and in addition retard fire and provide special resistance to attacks by rot-causing fungi and termites. Koppers Co., Inc., Pittsburgh 19, Pa.

PLASTIC SHEETS

Measuring 100 by 200 in., sheets of acrylic plastic, said to be more than twice the size of any plastic sheets formerly available, are being commercially produced by the manufacturers of Plexiglas. Development of the large sheets makes possible the use of a plastic in many large-dimension applications so far restricted to other materials or segmented constructions.

(*Continued on page 182*)

ARCHITECTS-DEALERS
In brief BUILDERS
Your Best Date In '48

HERE'S HOW TO DATE HER

Arrangements for a profitable lifetime date can be made by writing Metal Tile Products, Inc., Hastings, Michigan, for full information. Once you have seen Hastings Alumitile, checked and tested it, you'll adopt it as your steady date.

Hastings Alumitile is fireproof, waterproof, chipproof, impervious to alkali, won't crack or peel and resists stain.

Miss Alumitile!!

"In making plans for restaurants, snack bars, taverns, homes, etc., don't fail to investigate Hastings Alumitile for the wall covering," says our attractive Miss Alumitile. For certain, it will be your best date in '48. Available in 14 rich beautiful colors, including outside corners and wall plates for electrical outlets. Virtually unlimited color combinations arranged with Hastings Alumitile. Easy to apply and will last the lifetime of the building.

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A residential project of 3,000 apartments at Flushing, N.Y. Owned and operated by the New York Life Insurance Co. FABRON is used throughout its public spaces.
Architect: VOORHEES, WALKER, FOLEY & SMITH
General Contractor: GEORGE A. FULLER CO.

FABRON . . . *the* interior wall finish engineered for long range economy

ARCHITECTS who have used FABRON agree that it far outstrips in value any other type of interior wall finish for use in the income producing, investment type of buildings.

A wide range of FABRON colors and patterns are styled to meet the special requirements of institutional decoration. Even more important, however, is FABRON's proven durability. It outlasts conventional treatments by several redecorating periods—permits impressive operating economies. Installations done in 1940 are still fresh and attractive and promise many additional years of trouble-free protection.

FABRON's exceptional serviceability lies in its construction . . . a sturdy canvas foundation to which layers of plastic compounds have been fused into a structural unit that withstands hard usage. It strengthens plaster and prevents cracks—repeated washings will not dim its beautiful sunfast colors . . . features that spell economy. FABRON also prevents the spread of fire. Every roll bears the label of the Underwriters' Laboratories, Inc.

Even after 10 or 12 years of service, or when FABRON has outlived its original decorative function, its service still continues. Its sturdy base protects the plaster and its surface provides an ideal base for subsequent FABRON, paint or any other treatment. Thus, unlike other wall finishes, your original investment is not irretrievably lost.

Before you specify the interior wall finish for your next institutional project, be sure you are familiar with FABRON. Send the coupon today.

fabron
REG. U. S. PAT. OFF.
the canvas-plastic-lacquer wall covering with a life span measured by the decade

FREDERIC BLANK & CO., INC., 230 Park Avenue, New York
Please send us samples of Fabron and information concerning its use in:

☐ Hospitals ☐ Hotels ☐ Schools ☐ Theatres
☐ Restaurants ☐ Offices ☐ Apartments ☐ Residences

Name .....
Address .....
City & Zone ..... State .....
AR 5-48

FREDERIC BLANK & COMPANY, INC • Established 1913 • 230 PARK AVENUE, NEW YORK 17 • N. Y.

(*Continued from page 180*)

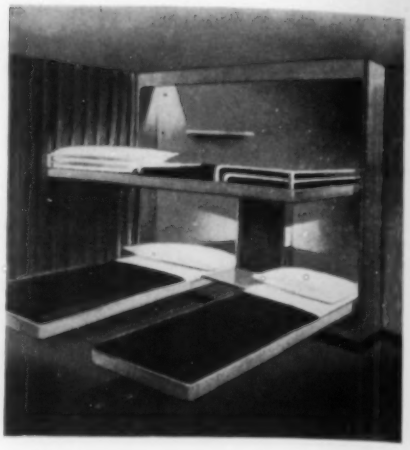
The material is expected to find wide use in applications such as partitions, wall facings, façades and curved glazing. For the first time the manufacturer claims to have produced a plastic sheet which can be produced in the standard 4 by 8 ft. module of the building industry.

The 100 by 200 in. sheets are available in limited quantities in ¼ to ½ in. thicknesses. Rohm & Haas Co., Knoxville, Tenn.

STOWABLE BEDS

The demand to save space in designs for ships, hotels and apartments has fostered a new sleeping system providing three beds in one unit. It was developed recently for use in combination living room-bedrooms on three projected passenger liners.

Two vertically stowed beds open into twin beds. The third bed, stowed horizontally behind the other two, provides the answer to the need for an extra sleeping space.



A metal cabinet holds three beds and provides storage space for six pillows

The all metal cabinet also provides storage space for six pillows and an upper bed ladder. Each of the beds is 3 ft. by 6 ft. 8 in. long. The beds operate simply and may be opened, fully made up and ready for sleeping, at any time by the occupant without recourse to service personnel. Jack Heany & Associates, 139 W. 54th St., New York 19, N. Y.

ACOUSTIC MATERIAL

Corkoustic, an acoustical material made entirely of cork, is being marketed again after being on essential priority during the war. This soundproofing material consists of 12 by 12 by 1½ in. blocks and has a coating of white resin-emulsion paint which is said to reflect 80 per cent of all light that strikes it. The Corkoustic has a thermal conductivity of 0.18 Btu. per sq. ft., per hr., per degree temperature difference. Armstrong Cork Co., Lancaster, Pa.

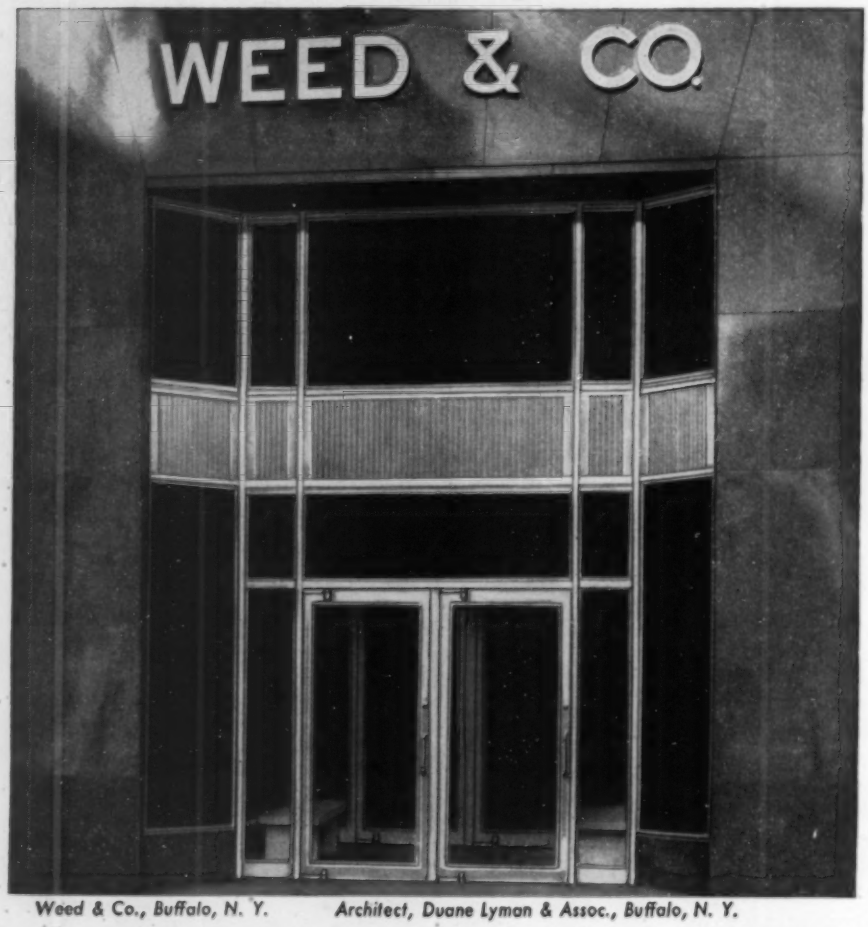
FLUORESCENT LAMP

A fluorescent lamp, designated *Warmtone* because of its approximation to the color of incandescent bulbs, is now in production. The new color lamp is said to have increased efficiency of approximately 7 per cent over corresponding wattages of standard white fluorescent lamps which makes possible the achievement of well-distributed, uniform illumination plus the warm atmosphere associated with incandescent lighting sources. Warmtone lamps are immediately available in 20 and 40 watt sizes. Sylvania Electric Products, Inc., 60 Boston St., Salem, Mass.

CONTROLLED REGISTER

Thermo-Matic Register is a new device for controlling individual room temperatures in homes using forced warm air

(*Continued on page 184*)



Weed & Co., Buffalo, N. Y. *Architect, Duane Lyman & Assoc., Buffalo, N. Y.*

The DOOR that lets traffic through QUICKLY

A recent installation of ELLISON the Balanced Door. Building Owners report the Balanced Door easily handles two to three times the traffic which could move thru ordinary doors.

"becoming the world's most popular door"

Ellison

ELLISON BRONZE CO.
Jamestown, New York
representatives in principal cities

the BALANCED DOOR

It's as easy as ordering a table d'hote dinner . . . *and works much the same way*

Good restaurants cater to many different tastes, offer many courses, many choices. Yet the table d'hote system lets you select a complete meal quickly and easily.

In much the same way, Lockwood's "Simplified Specifications" gives you a selection of Finishing Hardware for Schools, Hospitals, Apartments, Hotels, Residences and Industrial Buildings. Just *one* Unit Number specifies *all* the hardware—from lockset to kickplate—for any given door . . . *with alternate choices of design and finish.*★ The entire catalog is streamlined to *ease* your specification writing. But best of all, it recommends Lockwood Finishing Hardware that's beautifully executed inside and out to make lasting impressions — *all ways.*

You'll find "Simplified Specifications" in Sweet's Architectural File for 1948 — or write for a free copy of your own. L-85A

Jamestown Design. Set No. JA111 with 5100 Series Heavy Duty Standardized Cylinder Lock. A clean-cut, simple design made to withstand hard service.

★ **TYPICAL LOCKWOOD RECOMMENDATIONS FOR SCHOOL ENTRANCE DOORS**

Lynn Design. An alternate for Jamestown with graceful, rounded corners, but the same utility features. Specified by simply substituting design symbol 'LN' for JA.

Lockwood HARDWARE MANUFACTURING CO.

Division of Independent Lock Company • FITCHBURG, MASSACHUSETTS

(*Continued from page 182*)

heating systems. The prime purpose of the new register is to regulate the warm air input from each register in direct relationship to the heat loss from each room.

The Thermo-Matic registers are normally placed in the "easy to heat" rooms so that these rooms will not overheat before the balance of the residence reaches the desired temperature. A turn of the thermo-dial on the righthand side of the register selects the desired room temperature and then the thermostatic element automatically controls the amount of warm air from the register required to maintain room temperature at the predetermined setting.

The thermostatic element is so located as to respond to average room temperature and is not affected by duct temperatures.

Thermo-Matic Register is a self-contained unit requiring no connections other than mounting to the wall and it is interchangeable with standard type registers. Dole Valve Co., 1933 Carroll Ave., Chicago 12, Ill.

THE MEASURE OF YOUR REPUTATION

A house is often judged by its roof . . . and the measure of your reputation is the roof you build.

Better roofs are built with Bird Master-Bilt Thick Butt Shingles. Tests *prove* they're better . . . and the biggest test is time. The *extra* layers of asphalt and deeply embedded mineral granules give a tougher weatherproof surface, and added fire resistance for long life of the shingle. Narrower cut-outs and heavier shadow lines give a massive appearance to the roof. Bird Master-Bilt Thick Butt Asphalt Shingles are available in a wide range of handsome colors and blendes . . . *more variety than is found in any other type of roofing material* . . . there's a color perfect for every roof.

Test Bird Master-Bilts yourself—compare them. They are worthy of your best building design . . . the measure of your reputation.

In-wall condensation ruins many fine buildings. Guard against it . . . use Bird Neponset Black Vapor Barrier. On the warm side of insulation, it costs about $20 for a $10,000 house . . . an investment that pays. Ask about it today.

EST. BIRD & SON INC. EAST WALPOLE, MASS. 1795

NEW YORK SHREVEPORT, LA. CHICAGO

EXPANSIBLE HOUSE

A low cost *Celotex Cemesto* house of the expansible type, introduced at the National Association of Home Builders' convention in Chicago, consists of living-dining room, bedroom, kitchen and bath. The cost is estimated at $5000 without basement. Bedrooms and a dining room may be readily added.

This four room house can readily have bedrooms and a dining room added

Cemesto material and construction method, adaptable to any floor plan or either modern or conventional architecture, is said to reduce building time to one-third normal period. The Celotex Corp., 130 S. La Salle St., Chicago 3, Ill.

CLOCK THERMOSTAT

A modification of the *Chronotherm* clock thermostat permits home owners to replace manual thermostats without the need of service men. The Chronotherm now uses a 110-volt clock motor instead of a 24-volt motor which eliminates the need for transformer installation. The plug-in Chronotherm will come equipped with a universal wall plate that will automatically make possible electrical connections with existing thermostat wires. Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.

SHOWER UNIT

Absent from the market for several years due to material restrictions, the *Commodore Shower*, formerly known as 2000-C is again available. The construction of the shower is of white vitreous enamel back walls, plate glass sides, door set in solid brass frame chromium-plated, and has a deep type terrazzo receptor. Overall dimensions are 40 by 40 by 80 in. Fiat Metal Mfg. Co., Chicago 13, Ill., Long Island City 1, N. Y.

BLOCKS FOR THERMOPANE

To assist customers in best glazing practices for installing *Thermopane* in large picture windows, a special soft pine setting block 1 in. wide, 4 in. long and ¼ in. thick is being supplied to-

(*Continued on page 186*)

WORTHINGTON

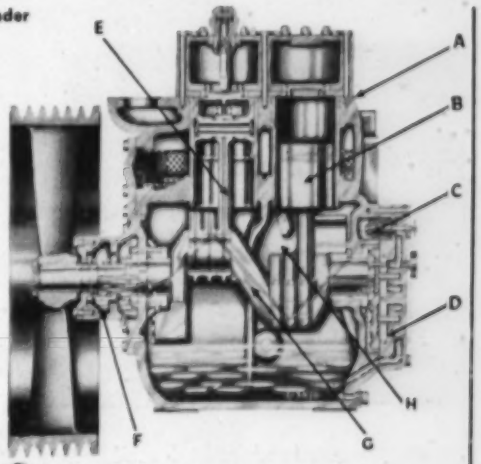
Air Conditioning and Refrigeration Report

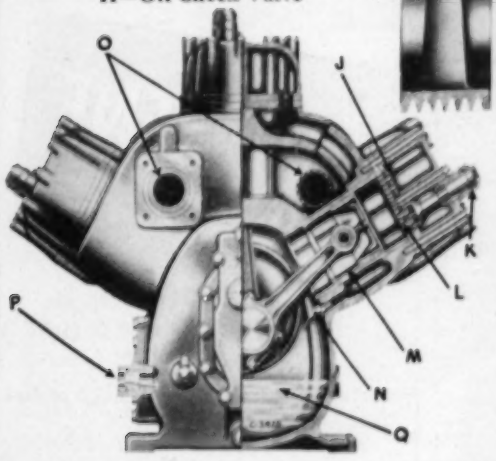
Worthington Pump & Machinery Corporation, Harrison, New Jersey

USERS REPORT LOWEST MAINTENANCE COST WITH WORTHINGTON FREON-12 COMPRESSORS

Longitudinal Section through 6-Cylinder Compressor

A—Valve Plate and Cylinder Head
B—Automotive-Type Pistons
C—Cleanable Oil Filter, Disc-Type
D—Gear-Type Oil Pump (Models 3-HF-4 and larger)
E—Forged Connecting Rods, Rifle-Drilled
F—Shaft Seal
G—Balanced Crank Shaft
H—Oil Check Valve





Transverse Section through 6-Cylinder Compressor

J—Discharge Valve
K—Suction-Valve Unloader
L—Suction Valve
M—Cylinder Liners
N—Oil Check Valve
O—Suction Strainer
P—Oil-Level Sight Glass (Wide angle vision)
Q—Large Crank Case (Exceptionally generous lubricating-oil capacity)

A number of Worthington design features are responsible for the success of Worthington single-acting, multi-cylinder compressors in providing efficient operation at very low cost for maintenance.

The famous Worthington Feather* Valve—lightest, quietest ever made—eliminates valve grinding and rarely needs replacement.

On most models, lubrication is force-fed from a self-contained gear-train-type pump driven directly by the crank shaft. A disc-type, continuously-cleanable filter keeps the oil clean.

Cylinder liners in larger models are centrifugally-cast from special high-grade alloy cylinder iron having exceptionally high wearing qualities.

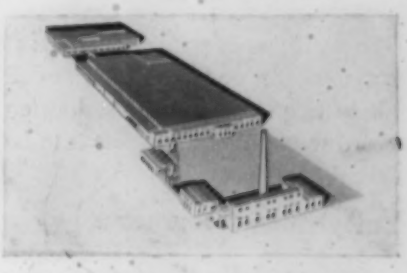
Main suction manifold, oil pump, oil passages and oil filters are built into the body casing, reducing the danger of leakage.

Write us for Bulletin C-1100-B30 on the complete line of Worthington Freon-12 compressors from 3 to 125 hp. *Worthington Pump and Machinery Corporation, Harrison, N. J. Specialists in air conditioning and refrigeration for more than 50 years.*

*Reg. U. S. Pat. Off.

WORTHINGTON

Air Conditioning and Refrigeration



300-Ton Worthington Compressor Aids in Yarn Processing

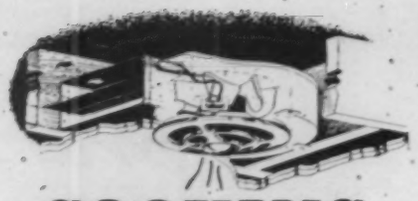
At the Hopewell, Virginia plant of the famous Celanese Corporation a 300-ton Worthington refrigeration unit is used in the processing of viscose yarns.

Penn Mutual Employees Work in Comfort

The Penn Mutual Life Insurance Company's main office, Independence Square, Philadelphia will be air conditioned with the help of two 350-ton centrifugal refrigeration compressors.

Balanced Air

An important reason for the fine performance of Worthington equipment in both large and small installations, both air conditioning and refrigeration, is the fact that every Worthington job is a *balanced* installation. All the vital parts are made by the *one* manufacturer and are carefully balanced, one with another. It adds up to smooth performance, low cost, long life—*more worth with Worthington.* See your nearby Worthington distributor (in the Classified Telephone Book) for details. AG-31



COOKING CABBAGE IS AN ARCHITECT'S PROBLEM

The problem of removing unpleasant cooking odors and greasy fumes definitely is on the architect's drawing board today. Women *expect* it to be solved *in the plans.*

THE BEST SOLUTION IS

Blo-Fan

ELECTRIC CEILING VENTILATOR

Blo-Fan installs in the ceiling, directly over the range, where a fan belongs. It collects foul air before it can spread.

• Blo-Fan's patented combination of fan and blower principles provides an efficiency unobtainable in any other fan. See Sweet's 29b/12 or write for complete information.

Blo-Fan

more than a fan... more than a blower.

PRYNE & CO., INC.

POMONA, LOS ANGELES, CALIFORNIA

NEW YORK SAN FRANCISCO CHICAGO

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 184)

gether with glazing instructions.

The small soft pine blocks are designed to provide a quick, accurate method of assuring proper spacing, to help in bearing the weight of the glass in a firm cushion which will not deteriorate, and to enable the glazing compound to seal effectively the space between glass and frame on the bottom, as it does where there is no load. Libbey-Owens-Ford Glass Co., Toledo 3, O.

Plastic-coated rods resist abrasion

GARMENT RACKS

Plastic-coated steel rods for use in garment racks are being manufactured in 14-ft. lengths which can be cut to a desired size or bent up to a 6-in. radius. The plastic surface is said to resist repeated moving and scraping without abrasion and without formation of dust. These *Colorods* are made in seven shades. Merchandise Presentation, Inc., 42 E. 51st St., New York 22, N. Y.

ALUMINUM ROOFING

Embossed aluminum is now available for built-up roofing. This thin-sheet aluminum is said to increase the useful life of the bituminous roofing materials commonly used for roofs on industrial and commercial buildings. It can be used for new roofs as well as for repairs to existing roofs.

The new material is 0.004 in. thick, comes in rolls 36 in. wide and 60 ft. long and is applied in roof constructions in the following order: roof deck (wood or concrete); one layer No. 30 asphalt felt; mopped hot asphalt, one layer embossed aluminum, mopped hot asphalt, one layer aluminum broomed into asphalt.

Advantages claimed by the manufacturer are: the aluminum built-up roof reflects heat-causing rays from the sun, protects the asphalt from water absorption, prevents brittleness in asphalt at low temperatures and is easily worked. Reynolds Metals Co., Louisville, Ky.

tread stock by ALBERENE

FOR SAFETY

Alberene stone's highly-toothed surface is always safe — wet or dry.

FOR WALKING COMFORT

Slip-proof, but never excessively so, Alberene stone treads retard your feet, but never bring them to a dead stop.

FOR DURABILITY

Dollar for dollar, Alberene gives you higher abrasion resistance than other stone. It's pit-proof, too.

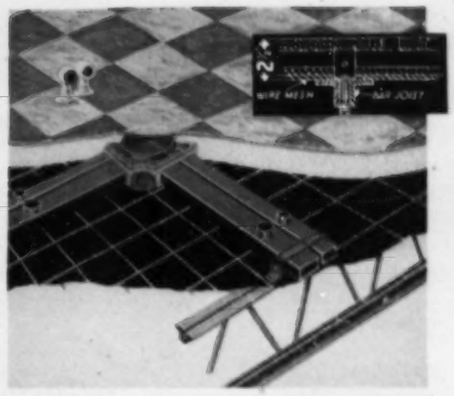
FOR BEAUTY

Alberene stone's fine, *finished* appearance . . . its neutral blue-gray color . . . harmonizes with any wall treatment.

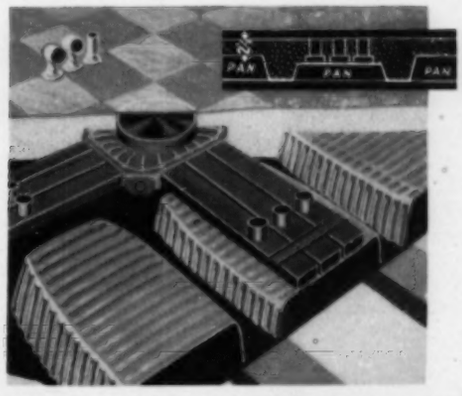
For full data about the many advantages of Alberene tread stock, write —

ALBERENE STONE CORP. OF VIRGINIA

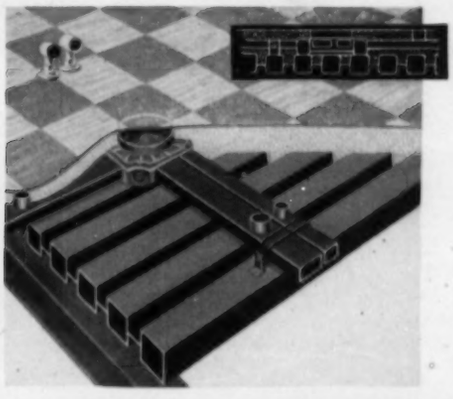
419 — 4th Ave., New York 16, N. Y.



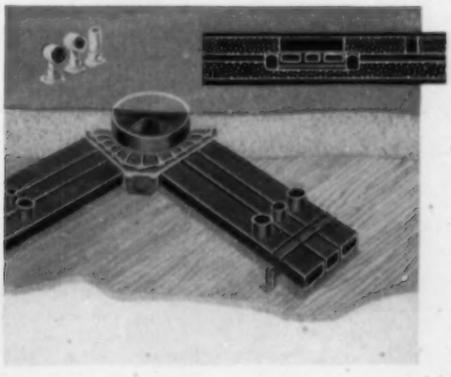
BAR JOIST CONSTRUCTION
Typical 2½" monolithic slab on steeltex metal lath supported by bar joists.



METAL FORM CONSTRUCTION
Reinforced concrete joist 2½" slab over permanent or removable metal tiles.



CELLULAR STEEL FLOOR
Typical steel floor panels with concrete fireproofing.



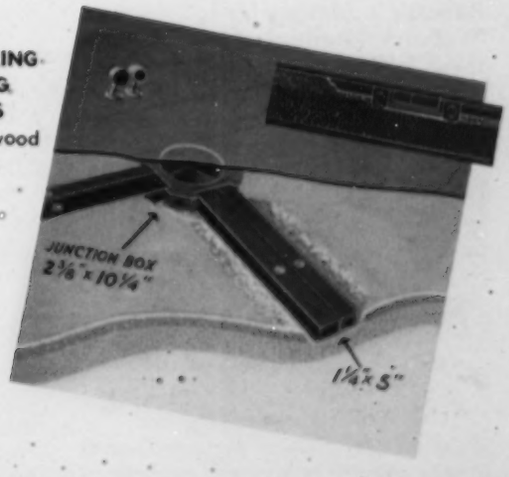
CONCRETE SLAB
Standard monolithic or slab and fill construction.

Walkerduct is engineered ••• TO FIT

Every WALKER Underfloor System, although made up of standard parts, is designed to serve the electrical needs of each particular job. Systems can be readily adapted to any type of floor construction in either new or existing buildings. WALKERDUCT provides economical and flexible means of meeting every outlet and circuit requirement likely to develop during the life of any building.

WALKER BROTHERS
Conshohocken 32, Pa.

MODERNIZING EXISTING FLOORS
All types wood or concrete.



For further details, write for our Catalog # 146 or consult Sweet's Architectural Files.

walker of Conshohocken UNDERFLOOR SYSTEMS

GRACIOUS LIVING IN PHILADELPHIA MANNER

Wynnewood Plaza Apartments, Wynnewood, Pa. Completed early in 1947. Equipped with Webster Moderator System of Steam Heating. E. J. Frankel, Owner. J. E. Fieldstein, Architect. William T. Fowden, Chester, Pa., Heating Contractor.

Built during 1945-46, when prices and shortages kept most builders out of the market, Wynnewood Plaza is now bringing a substantial return on the investment of more than one million dollars.

E. J. Frankel, enterprising Philadelphian and owner, apparently knows the kind of deluxe living accommodations that Philadelphians require.

Take heating. A Webster Moderator System of Steam Heating gives Wynnewood Plaza "controlled-by-the-weather" comfort. Comfortable temperatures are maintained automatically by a control which varies steam supply with changes in outdoor weather conditions.

While comfort is the prime objective, economy results from the reduction in overheating. Fuel oil consumption for heat and hot water for the first year was 75,000 gallons in an installation of approximately 14,000 sq. ft. of radiation. Mr. Frankel expects to better this with more experience in operation.

Mr. Frankel is now building two new apartment houses, Pelham Park, a 9-story building in Germantown, and Latches Lane, a 6-story building in Merion. He has selected Webster Moderator Systems for these buildings.

Let us tell you what Webster has to offer for your projected new apartment developments.

WARREN WEBSTER & CO., Camden, N. J.
Representatives in principal U. S. Cities : : Est. 1888
In Canada: Darling Brothers, Limited, Montreal

WEBSTER
MODERATOR
SYSTEM
OF STEAM HEATING
"Controlled by the weather"
For Multi-Story Apartments

GARDEN APARTMENT PROJECTS
For one- and two-story garden apartment projects use Webster Baseboard Heating.

(*Continued from page 149*)

PILING

Interlocking Steel Sheet Piling (Folder F-110). Gives advantages, physical characteristics, suggested applications of high-strength, box-type corrugated piling. 4 pp., illus. L. B. Foster Co., Box 1647, Pittsburgh 30, Pa.

CLAY CHIMNEY PRODUCTS

Clay Flue Lining. Data on vitrified clay stove pipes, flue rings, and chimney tops. 12 pp., illus. Clay Sewer Pipe Assn., 1105 Huntington Bank Bldg., Columbus 15, Ohio.

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

H. C. Avery, Jr., Architect, 313 N. Colorado, Midland, Texas.

The Ballinger Co., Architects and Engineers, 105 S. 12th St., Philadelphia 7, Pa.

W. H. Barrows, A.I.A., United Nations Headquarters Planning Office, 405 E. 42nd St., Room 305, New York 17, N. Y.

William Breger, R.A., Planning and Design Group, 320 E. 39th St., New York, N. Y.

H. L. Eiserloh, Architectural Student, 2802 Rio Grande, Austin, Texas.

William Fergus, Jr., Architect, 138 Main St., East Orange, N. J.

Herbert P. Fifield, Architect, 350 Spreckels Bldg., San Diego 1, Calif.

H. Gordon Graham, Box 417, Potosi, Mo.

Nicholas A. Kabush, Architect, 318 Rookery Bldg., Spokane 8, Wash.

Arthur S. Katz, Architect, 1001 Broad St., Newark, N. J.

Norman E. Keller, A.I.A., 925-24th St., Moline, Ill.

D. M. May, Consulting Engineer, 6057 Beck Ave., N. Hollywood, Calif.

Nicholas J. Pipetone, Architect, 6245 Gravois Ave., St. Louis 16, Mo.

Ben L. Rose Associates, Designers and Builders, 1674 Broadway, New York 19, N. Y.

Martin Stern, Jr., Architect, 8912 Burton Way, Beverly Hills, Calif.

Stone & Pitts, Architects and Engineers, Houston office, 951 M. & M. Bldg., Houston, Texas.

Clyde Trudell, Architect, 188 Bulkley Ave., Sausalito, Calif.

W. F. Williams, M.R.A.I.C., Architect, Nelson, B. C.

Wilson, Morris & Crain, A.I.A., 3330 Graustark, Houston, Texas.

COMPLETE DATA *on* FIRE ALARM SYSTEMS
AT YOUR FINGER TIPS

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You'll Want This!

Time and money saving information on all types of Fire Alarm Systems is constantly at your finger tips in Autocall's new reference booklet "Signal and Control Apparatus". More than 50 pages of concise, complete and accurate information based on Autocall's over 40 years of experience.

COMPLETE SUGGESTED ELECTRICAL SPECIFICATIONS for all types of Fire Alarm Systems.

ILLUSTRATIONS, WIRING DIAGRAMS, like the one shown above, and DESCRIPTIONS of Fire Alarm Systems adaptable to any building.

SPECIFIC INFORMATION as to size, type and operation of Punch and Printing Recorders, Fire Alarm Boxes, Signals, etc.

If you're interested in fire protection for buildings, Autocall's "Signal and Control Apparatus" booklet is a "must" for you. Send for your free copy today. No obligation.

the Autocall Co.
230 TUCKER AVE., SHELBY, OHIO
ALSO MFRS. PAGING AND SPRINKLER ALARM SYSTEMS

always Popular ... again in Production!

the "Cosmette"

LAVATORY

PATENTED

● So attractive to the eye as well as the budget, so generous in usable area, so skillfully designed to fit limited bathroom space...this is the *Cosmette!* Produced by Case and distributed nationally—see your Classified Telephone Directory or write W. A. Case & Son Mfg. Co., Buffalo 3, N. Y. Founded 1853.

- Genuine acid-proof Vitreous China.
- Dry shelf space for toilet articles.
- Built-in soap dish.
- Concealed front overflow.
- Towel bars, if required, free from the wall.
- Wall hung or with legs.
- All exposed parts chromium-plated brass.
- 20"x13½" and (for production later) 24"x16½".

Case

PLUMBING FIXTURES

● **NO. 3408 EASY-ACTION "SLANT-BACK" FITTING.** A fully chrome-plated fixture with permanent non-splash device. Design provides for easy renewal of any wearing part or the entire unit.